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**SUBMISSION OF ONTARIO**  
to the  
**ROYAL COMMISSION**  
on  
**CANADA'S ECONOMIC PROSPECTS**

**JANUARY 26, 1956**



**Order-in-Council Establishing The Royal Commission  
on Canada's Economic Prospects and Outlining  
the Terms of Reference**

(from P.C. 1955-909, Canada)

The committee of the privy council have had before them a report from the Prime Minister stating that it is desirable that the Canadian people should be more fully informed of the long-term economic prospects of Canada, and that it is in the national interest to initiate, examine and publish studies of Canada's economic potentialities, including developments in productive capacity, the growth and distribution of the population, the direction and nature of our internal and external trade, progress in standards of living and expanding requirements for industrial and social capital.

The committee, therefore, on the recommendation of the Prime Minister advise that Walter Lockhart Gordon, Toronto, Ont.; Omer Lussier, Quebec, P.Q.; Albert Edward Grauer, Vancouver, B.C.; Andrew Stewart, Edmonton, Alta.; and Raymond Gushue, St. John's, Nfld., be appointed commissioners under Part I of the Inquiries Act (Chapter 154 of the Revised Statutes of Canada, 1952) to inquire into and report upon the long-term prospects of the Canadian economy, that is to say, upon the probable economic development of Canada and the problems to which such development appears likely to give rise, and without limiting the generality of the foregoing, to study and report upon

- (a) developments in the supply of raw materials and energy sources;
- (b) the growth to be expected in the population of Canada and the changes in its distribution;
- (c) prospects for growth and change in domestic and external markets for Canadian productions;
- (d) trends in productivity and standards of living; and
- (e) prospective requirements for industrial and social capital.

The committee further advise:

1. that the commissioners be authorized to exercise all the powers conferred on them by section 11 of the Inquiries Act;
2. that the commissioners adopt such procedures and methods as they may, from time to time, deem expedient for the proper conduct of the inquiry and sit at such times and in such places in Canada as they may decide;
3. that the commissioners be authorized to engage the services of such counsel, staff, clerks and technical advisers as they may require at rates of remuneration and reimbursement to be approved by the treasury board;
4. that the officers and employees of the departments of the government of Canada render such assistance to the commission as may be required for the inquiry;
5. that the commissioners be directed to report to the governor in council;
6. that Walter Lockhart Gordon be chairman of the commission and Douglas V. LePan be secretary and director of research.

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## **GENERAL FOREWORD**

This Submission is divided into three parts:

Part I deals with the economic structure of Ontario and its growth.

Part II outlines the increasing demand for provincial and municipal services as well as some of the problems that the Province's growth has created.

Part III provides a number of special studies on topics relating to the general submission.

Concerning the projections on such matters as population, labour force, school and university enrolment, motor vehicle registrations and public service costs, we cannot emphasize too strongly or too often that such projections are an extension of past trends, based upon our best judgment of the future as seen at the moment. Although these projections are, in a sense, ventures into prophecy, we do not dignify them by the terms "estimates" or "predictions." We are under no illusion that they will be borne out exactly. If they stimulate thinking about the future and on how our affairs may be conducted so as to promote the even development of this great Province and Nation, they will have served their purpose well.



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## ***Part I***

This part provides a review of Ontario's economic development.



**Submission of the Government of the Province of Ontario**

**To**

**The Royal Commission on Canada's Economic Prospects**

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## **Chapter 1**

### **INTRODUCTION**

The future expansion of Canada will be created by growth in total production and in output per man in the industries in which Canadians work and by the rising living standards which such production makes possible. Only by such expansion will the present high rates of natural increase be maintained and immigrants attracted. The production of cheap raw materials from rich natural resources, their processing and transportation to export markets have been the main basis of the high output per man already achieved. Our standards of living also depend, however, on two other factors: the terms of exchange between our exports and the goods we buy from other countries and the efficiency with which we apply our labour in making at home goods which cannot be imported or could be imported only at great cost.

The terms of trade between our exports and imports are set largely by world conditions beyond our control. On the other hand, the determination of the productivity

of Canadian industry lies more nearly in our own hands. To raise efficiency in the export industries is to make more export goods with a day's labour and so get more imports in exchange. When goods are made and sold within Canada as cheaply as they can be got elsewhere, dependence on imports is reduced and employment in Canada increased without sacrifice of living standards.

Both these ways of furthering Canada's development have always been powerfully affected by government policies. Policies affecting international trade and levels of employment are the responsibility of the Federal Government. Provincial governments must assure the basic security of life and property and provide the public facilities without which private business could hardly be conducted. In the past, attention has been concentrated first on one of these aspects and then on the other. Despite the difficulties faced by some of our export industries and the slowness with which freedom of access to

foreign markets is being achieved, the main problems of the future are likely to be created by growth.

The need of an expanding western civilization for raw materials assures markets for our exports, provided they are produced cheaply enough. Much money and skill are being devoted to that end. What needs more attention, skill and money spent upon it, is the creation in Canada of the specific facilities required to permit a great growth in manufacturing. Only by such growth can we employ the greater population desired. Only by making these industries as productive as possible can our population be kept at home in face of the attraction of living and working under the conditions which the United States is able to create.

With this latter aspect of our national problems, the Government of the Province of Ontario is, of necessity, particularly concerned. Because one-third of the people of Canada live and work in Ontario, the trend in national income will be greatly influenced by the production of industries located in this Province. Like other provinces, Ontario has an important stake in the specific raw material producing industries and the policies which affect their production. Recent mineral developments suggest that this branch of Ontario's industry may grow phenomenally. It is certain, however, that the southern part of the Province will see a growth in manufacturing and a trend to urban development much stronger than any yet experienced.

In the past, many Ontario industries have been dependent upon world markets; whether that dependence, now somewhat reduced, will be re-established is not as yet clear. There appears little question, however, but that the growth of the Canadian home market and the continuing high incomes earned by Canadians employed in the export

industries justify a very great increase in manufacturing for the internal market. Some types of manufacturing and service industries will be found in every community, but most of the things consumers buy, especially the durable goods, whose importance increases with our living standards, are made for the national market in that part of the country where such goods may be produced at the lowest cost and from which they can be most economically marketed. Experience and analysis alike suggest that in the future most of this sort of manufacturing will be centered in Ontario.

The nature of the industrial growth of the United States throws much light on the factors which have brought about Ontario's industrial development. Perhaps the most conspicuous feature of the American industrial scene is the extreme concentration of the more complex forms of manufacturing in two great industrial belts, one along the Atlantic Coast from Massachusetts to Pennsylvania and the other in the states which lie between the Ohio River and the Great Lakes. Industries which process raw materials or which provide urban areas with commercial commodities and services are, of course, spread all over the United States where mineral deposits have been found or cities have grown up, but what is phenomenal is the degree to which the more durable goods, and the machines by which they are made and transported, are manufactured in these two regions.

It is relevant here to seek to understand the reasons for the great growth of manufacturing in the states just to the south of us, since they obviously bear on the situation in southern Ontario. Transportation, cheap and accessible, is perhaps the specific asset of every great manufacturing area. Fuel, power, capital and men all follow great industries;

but industry itself seeks out areas blessed by nature or history with exceptionally good transportation facilities. In addition, a soil and climate well suited to the mixed farming which produces at low cost the perishable goods required by large communities, level land in plenty to allow for growth, and an abundance of fresh water for industry and residential living—all these reduce the cost of manufacturing and increase the attraction of the area for the working population.

The northern boundary of this industrial heartland which extends up from the United States into Ontario is marked by the southern edge of the Laurentian Shield. Along that edge, the upper Great Lakes lie in the west and in the east the St. Lawrence River flows over it to the sea. Between these extremes, Lakes Huron, Erie and Ontario lie far enough south of the rim of the northern forest and mining country to enclose that part of the interior plain of the continent which now forms southern Ontario. Here one finds all the advantages which have so strongly attracted industries to the states to the south of us. There is an abundance of water, much level and fertile land, together with a climate and soil favourable for mixed farming. Through it runs the most direct land route between the plains of the Great West and the Mohawk gateway to the Atlantic Coast. With the rest of the great manufacturing region to which it is so much akin, it is connected by the broad highway which the Great Lakes afford. This surely is the site, which, by its location and physical structure, is more favourable than any other in Canada for the low cost production of the complex and varied products of modern industries.

If nature thus predisposed southern Ontario to a manufacturing career, history made that upshot inevitable. Long before the

industrial era, there was laid down a network of canals and railways such as that which first attracted American manufacturers into the area between Pittsburgh and Chicago. Indeed, so strategically was the Great Lakes-St. Lawrence waterway located for the transportation of the products of the Mississippi valley to European markets, that throughout most of the 19th century the port of Montreal offered New York its most serious challenge for the control of the export trade of the interior. This rivalry stimulated the building of canals on the St. Lawrence and the laying down of a railway network in southern Ontario. During the present century, the railway network has been greatly extended and the long barrier across northern Ontario again bridged. Lines, including the Province's own Ontario Northland Railway, were also driven from southern Ontario to tap the new mineral and forest wealth of Ontario's north country.

In this fashion, southern Ontario was linked with the new wealth-producing areas of the prairies and the Canadian Shield. The stimulus of this connection built here many prosperous cities and towns. Municipal facilities were created and many community manufacturing and service industries grew up. Urbanization was already under way. All these changes provided the environment which, when the demand justified it, encouraged the development of manufacturing in southern Ontario rather than elsewhere. The costly requirements of an urban civilization were already present; industry's share of the taxation required for their further expansion was not so heavy as it would have been in less developed areas. Everything, in short, favoured the eventual production of those complex products of modern life which

are normally made only in the most advanced industrial countries.

In all this long preparation of southern Ontario for its career as a manufacturing area, public initiative was a particularly important factor. In railway and canal building, the role of governments was particularly conspicuous on both sides of the border. But Ontario made a spectacular contribution of its own, when its government created one of the first great public power systems in the world. Subsequently, in both southern and northern Ontario, the main sources of hydro-electric power have been thoroughly exploited. Today, the climax of this great program grows to completion on the upper St. Lawrence River. The co-operation of American and Canadian governments in this major power and navigation project marks the end of the long rivalry for the control of the traffic which, by the structure of the continent, is directed along this corridor between the West and the Atlantic ocean. It is the critical importance of both the power and navigation aspects of the St. Lawrence scheme to the further growth of the great interior manufacturing region lying on both sides of the lower Great Lakes which has brought about this co-operation. The leadership given in this development, not only by the Government of this Province but also by the Federal Government, indicates forcibly the confidence we have that the Canadians who live in this very important region can be depended on to make full use of the opportunities thus put before them. It also underscores the importance for the country as a whole that they should do so. This great continental project faces us with a direct challenge to rise to the full measure of the industrial and economic growth made possible by our location and our history.

To this challenge there has been added in the last decade another in which American initiative, skill and capital also join with our own in a conspicuous degree. The great arc of the Canadian Shield which encloses Hudson Bay is having its vast mineral wealth revealed at amazing speed. In the mines and mills of the north, there thus has come into being a great new market for machinery and supplies as well as the means to further process the swelling output of primary materials being poured forth. To compete with the manufacturers of other regions and countries for this new business, the manufacturers of southern Ontario would seem to be in an excellent position.

As the economic development of the United States approaches the stage of serious raw material scarcity, American experts agree that they see no other more accessible and promising source of supply than our own north country. Americans are willing to provide the funds, the enterprise and the machines to develop these resources in the face of immense natural obstacles. Canadians can best assure themselves their proper share in this development by matching the initiative, skill and capital of foreign businessmen with their own. These qualities and the necessary capital for development are often nurtured and acquired in the process, as the history of our mining and forest industries well shows. It is also true, however, that the skill, experience and capital required are most readily developed in the wide variety of circumstances that only a great industrial region creates. The north will confront young Canadians with challenging opportunities to which many will respond. But the industries of the north alone can never provide our rapidly growing population of young people with the great variety of employment opportunities and with the

chances of achieving high living standards which so many of them have in the past sought in the United States. As the years pass, a rapidly increasing number of Canadians will seek employment in the manufacturing and service industries of our great urban centres.

For the creation of an industrial belt whose industries have very high levels of production per man, private enterprise and capital are not enough; governments must today play a vital role. To low cost production, they may contribute directly by carefully planned and controlled urban growth and a well-designed and adequate network of highways, roads, railroads and other transportation facilities. Poor facilities waste time in moving men and goods, raise costs and handicap our manufacturers in competing with producers in the industrial areas of the United States, which are so lavishly provided with transportation services.

Important as such material contributions are to industrial efficiency, they are perhaps exceeded in urgency by the need to provide the great variety of private and public services — in peacetime, provincial and municipal services in particular—which contribute so much to the creation of a well-trained, productive and contented people. Schools, universities, hospitals and municipal facilities are the obvious needs; no less important, however, are smoothly functioning legal services, conciliation and other labour services and well-trained civil servants. In providing these, much public expenditure will be required. If the nation is to withstand the intensified competition which the increasing pace of technical change is bringing upon us, we cannot expect to have the spending program of a pioneer economy.

Though some industries currently feel, very keenly, competition from countries

overseas, the severest challenge to the Canadian manufacturer is likely to come from the United States. The Canadian producer cannot lag too far behind in meeting the competition of the infinite variety and cheapness of American mass-produced goods and services. To meet their challenge, he can neither resort to the production methods made possible by the larger American market nor to wage rates too much below American levels.

In the rapid growth that lies ahead, however, there is an opportunity to exceed the United States in the skill with which the expansion of our cities and towns is guided and the adequacy with which the basic facilities of community living are provided. In this particular, at least, Ontario's industries need not be handicapped. For a time, they might indeed reap the great advantages of a relatively fresh start.

That the people of Ontario should be given the greatest possible aid in meeting the challenge which confronts them is obviously of the greatest importance to all Canadians. Great manufacturing development may well occur in other provinces. It seems clear, however, that Ontario is not likely to lose her present predominance as a manufacturing province. Accounting, as she does, for more than half Canada's total manufacturing output, the greatest possible efficiency of Ontario's industries is of prime importance to the whole Canadian economy. The Government of Ontario is therefore particularly concerned that the size of the task which falls to its lot in furthering the growth of a great manufacturing region should be understood by all Canadians. With the other provinces, it shares the tasks of developing agriculture and other natural resources, but upon none of the others does there seem to rest the burden of so laying the basis for a great

industrial region that Canadian manufacturing may maintain its position in the face of the most efficient of its competitors in other lands. It is in the national interest that the governments of all the provinces should be assured revenues adequate to their several and great responsibilities. To none of them will this be of more importance in the future than to the Government of this Province. Our national prosperity depends to a peculiar

degree upon the way in which these responsibilities are discharged.

The chapters of this brief describe the main features of the Ontario economy and set out in detail the nature and magnitude of the financial obligations which face its government. It is hoped that in this way the Commission's consideration of our national productive potentialities and trends may be advanced.

## Chapter 2

### THE STRUCTURE OF PRODUCTION IN ONTARIO

The complex production structure by which, in industry, agriculture, mining, forestry, the service occupations and the professions, the people of Ontario earn their living is most readily broken into its main elements by bearing in mind its historical development. For most of the 19th century, Ontario was a pioneer area, the development of which was stimulated by the production of timber, lumber and wheat for export. Its roads, canals and railroads were built mainly to maintain access to the retreating forest and to bring to market the wheat which settlers produced as they expanded over the cleared land. From the beginning, a considerable proportion of the people of the Province was engaged in providing the transportation and marketing services by which the trade in the great staple exports was carried on. At favourable spots, villages were founded and grew into towns and cities, the citizens of which earned their living in trade, in keeping traffic flowing or in the service industries and professions by which the needs of the settlers and forest workers were met.

Two types of manufacturing, which have ever since made up a large part of industry in Ontario, appeared very early in these villages and towns. One type processed cheap raw materials; these were the grist and flour mills, the small spinning and weaving plants, the furniture and carriage factories. The

other type may be called "community" industries of "the butcher, the baker, the candlestick maker" variety—the innumerable small shops from which the demands of residents for perishable products and for services were supplied. Their modern counterparts are the newspaper, the dry cleaner, the garage and the entertainment industry. Complicated and expensive products, such as machinery and durable consumer goods, were imported.

When the hopes of Confederation were finally fulfilled by the opening up of the prairies and the creating of a wheat export economy, Ontario found itself with the mechanical and institutional equipment to share in the transportation and marketing of the new export staple and with a new central position in the Canadian economy from which to undertake it. It was, therefore, able quickly to shift its economic basis somewhat from the production of a local export staple to the transportation, marketing and financial business which the West created. Ontario farmers meantime either went West or, staying home, began the long adaptation of Ontario farming to the needs of local urban markets, which even in the 19th century had been of growing significance to them. Under these new circumstances of the early 20th century, manufacturing in Ontario began to add a new dimension. Finding their domestic markets improving and a great, new market in the West opened up, the makers

of consumer goods extended their operations, and the production of such goods for export from the Province became a significant source of employment and income. The iron and steel industry was similarly given a great stimulus both by the direct demand for its products from the West and the local demand in the growing cities of Ontario. When demand was about to slacken off in the West, the First World War brought a new and even more insistent export demand to both the consumer goods industry and the incipient capital goods industry of the Province so that, by its end, Ontario's prosperity, erected on the new basis, had far exceeded that which the Province as an export economy had itself ever been able to produce.

Unfortunately, during the two decades between the wars, the wheat economy proved an unsatisfactory support for the Ontario, and indeed the Canadian, economy. Overseas markets for wheat were reduced first by the currency and economic disorganization which followed the First World War and then by the great depression of the 1930's. Only for a few years in the late 1920's was the old basis of prosperity restored. Even in those years, however, the Ontario economy was shifting its basis again. Just at the time when acting as merchant and manufacturer for other export regions was proving an insufficient economic basis for continued growth, technical change and great mineral discoveries in northern Ontario made possible a return by the Province to the production, processing and export of its own staples once more. The growth of United States demand for newsprint, together with the decline of its pulpwood resources, brought the forests of northern Ontario within the range of economical exploitation. At the same time, new methods of producing large quantities of electricity cheaply from waterpower enabled

the newsprint industry to get the power it required. The new gold and other metal mines of northern Ontario also made avid use of hydro-electric power. Private enterprise developed new uses for nickel to replace the war demand. The electrical industry made use of increasing amounts of copper both in the construction of generating and transmission equipment and in the manufacture of electrical consumer goods. The rising motor car industry also made more and more use of metals produced in Ontario and of electrical equipment made here. The great expansion of gold production in the new camps of northern Ontario directly and indirectly created much business in the Province and sustained the nation's export position, particularly in the depression of the 1930's when the prices of other export staples fell drastically.

By this series of developments, the impact of the difficulties of the inter-war period on the people of the Province, both urban and rural, was greatly mitigated. At the same time, Ontario's economic life was being transformed from one predominantly dependent on business done with the other export and raw material producing areas of Canada to a more self-contained basis. There was growing up within the boundaries of the Province a considerable volume of business and employment arising out of the exploitation of its own natural resources, their processing and sale and the servicing and supply of the mineral and forest industries of its northland.

Before the Province became too greatly dependent upon business originating within its own boundaries, however, the Second World War and the great resource development boom of recent years again sharply reversed the direction of its development. Once more, outside demand took a leading

part in creating employment and income in Ontario. The insatiable demands of war and of a high level of resource development during a post-war period in which goods were still scarce all over the world fell in large part upon the manufacturing industry of the Province. At the same time, population growth and the rising productivity made possible by technical change created a vast Canadian consumer demand, in the satisfaction of which the manufacturing industries reached a prosperity and maturity which made of this Province not only a great Canadian manufacturing region but one of the most considerable of such regions on this continent, if not in the western world.

Despite this new dependence upon external demand, however, the Ontario economy did not return to simple dependence either on its own food crops and raw materials or on dealing in those of other parts of the country. Rather, it combined both these elements into an economy having a much more satisfactory diversity as its basis than ever before. A large part of Ontario's business activity continued to rest upon mutually satisfactory relations within the Province between a wealthy resource and food producing northern and rural Ontario region and an urban servicing, processing and manufacturing sector, which sold to others its newsprint, mineral and food products but consumed within its own borders a growing proportion both of its primary and its secondary manufactured goods. Equally essential to the prosperity of Ontario has been the sale of its manufactured products in all parts of Canada. There is thus a relationship of mutual dependence between Ontario and the other parts of Canada. Canadians living outside the Province will probably sell a rising proportion of their products here and the one-third of all Canadians who live within its

borders will look to their fellow Canadians as buyers of Ontario's products.

The structure of production in the towns and cities of Ontario may thus be thought of as built up of a number of layers, each of which was particularly important in one phase of the Province's growth. There is perhaps still some remnant of the business which was dominant in the early part of the century when the prairies were being settled and wheat marketed overseas. The second element was created when Ontario opened up its own north country and developed a considerable exchange between the northern and southern parts of the Province, together with the export of much of the output of the new Ontario primary industries. Since 1940, the relatively low level of international competition and the rapidly rising domestic demand has permitted the manufacturing industries of Ontario to go into the business of making for the Canadian home market complex consumer and capital goods of a sort hitherto imported. The expansion brought about by these three types of industry in both the population and the living standards of the people of this Province has greatly enlarged the fourth type, the community and service industries which are found everywhere in proportion to the population and the purchasing power of the communities they provide with those perishable goods and services which must be locally produced.

In recent years, the passing of the phase of worldwide goods scarcity which began with the outbreak of the Second World War has brought upon those manufacturing industries of Ontario which supply the Canadian market with complex consumer and capital goods a new severity of import competition. In particular cases, the severity of this competition may have been enhanced by

special circumstances. But there can be no question that these important industries will have to adjust themselves to sharing the growing Canadian market with foreign producers to a greater degree than has been common in the past two decades.

The disadvantages from which our manufacturers suffer in such a competitive struggle are well known and do not need to be given detailed consideration here. The competition of countries where wages are lower than in Ontario will be particularly felt in the making of products where much labour is employed and the familiar North American response to this sort of competition—mechanization and large volume output—is more difficult to employ. At the other extreme, the products of industries most readily mechanized come to Canada from the United States, where the size of the market makes possible a massiveness of production and a cheapness not usually attainable in Canada. Moreover, as our growth brings us within sight of a scale of production justifying the optimum North American size of manufacturing plant, yet more extensive applications of machinery to production in the United States may carry it once more beyond our grasp.

What the appropriate Canadian responses to these various forms of foreign competition are has not as yet become clear. But if we are to avoid relapse to a more primitive form of manufacturing economy than we now possess, improvement of productive efficiency in every possible way must be sought. The main

burden of this search rests, of course, upon private business; but the ways in which government can make private efforts more productive multiply year by year. Import competition is likely to be of such a character, moreover, that no avenue of improvement can safely be neglected if we are to maintain and expand in Canada a structure of production sufficiently diverse and various to provide a challenging opportunity to the many capacities which our vigorous and expanding population possesses.

A consideration of the structure of the economy of the Province of Ontario thus brings us, by another route, to the same policy problem reached by the line of argument followed in the first chapter of this brief. While other provinces share this problem of international competition with their manufacturing industries, it is to a peculiar degree the problem of the people and Government of Ontario. It is, therefore, in the interests not only of the Canadians who live in this Province but of all Canadians that such national economic policies should be arrived at as will enable the Government and the people of this Province together to tackle this problem successfully.

Before the nature and dimensions of the Provincial Government's share in such a program are set out, however, the more important features of the general structure of the economy of the Province of Ontario should be considered in somewhat greater detail.

## Chapter 3

### FACETS OF THE ONTARIO ECONOMY

#### POPULATION

Perhaps the most remarkable aspect of the population situation in the Province of Ontario is the fact that, since Canada assumed its present form with the settlement of the prairies, Ontario has had about one-third of the population and 37 per cent of the labour force of Canada within its borders. Neither prosperity nor depression nor war has changed this relationship, though the proportions living in each of the other provinces have changed considerably. Whatever be the explanation of the stability of this ratio, its size shows very clearly how important the economic health of Ontario is to that of Canada as a whole.

Because of the stability of this relationship between the population of Ontario and Canada, their rates of population growth are much the same. When the prairies were being settled, Ontario's rate fell behind somewhat, but since 1921 the two rates show very little difference. The relation between Ontario's labour force and Canada's has been fairly constant, though recently the Province's percentage of the whole seems to be rising. The absorption by Ontario of more than 50 per cent of the country's immigration may be the reason, as most of these newcomers are in the productive age groups.

Fifteen to twenty years ago, the Province's population was growing at an average rate of

40,000 per year. Recently, the average annual increase has been about 150,000. For several years, it has reached 3 per cent per annum—a rate of population growth exceeding that of the rest of Canada and nearly double that of the United States. Ontario has added 1.2 million people to its population in the last decade. It is now a province of  $5\frac{1}{4}$  million people and it will likely cross the 6 million mark in the early 1960's. Two main factors have contributed to this rapid increase: the rise of Ontario's birth rate to the highest level in its statistical history—with the result that live births are now approximating 140,000 a year, well over double those in the middle 1930's—and immigration to Ontario, which in the last decade has amounted to over 630,000.

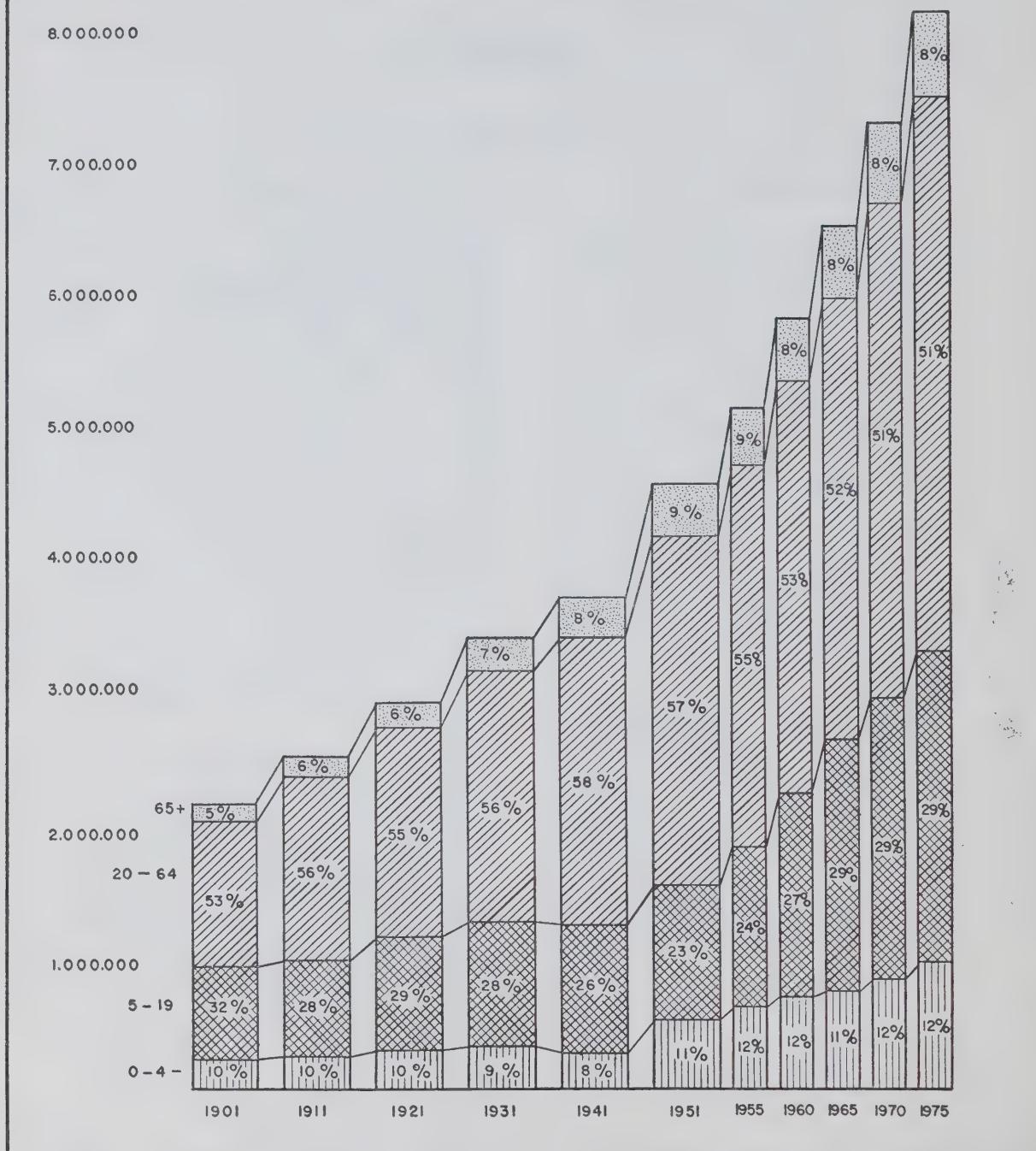
Although statistics showing the rural and urban distribution of Ontario's population are lacking in accuracy, a tendency for more and more people to live in cities and towns and other urban areas is unmistakable. The tendency to urbanization has been far more pronounced in Ontario than in the rest of Canada. In fact, the evidence suggests that Canada as a whole was only reaching the stage of urbanization in 1951 that the Province of Ontario had attained in 1931.

The regional distribution of Ontario's population shows, of course, a heavy predominance in favour of the southern areas.

# ONTARIO POPULATION BY AGE GROUPS

CENSUS 1901-1951, ESTIMATE 1955 AND

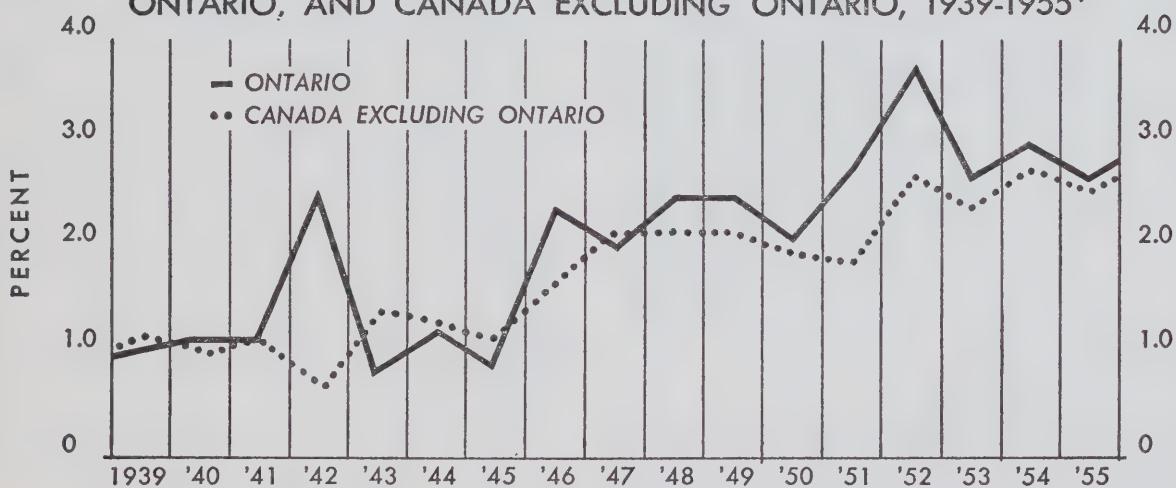
PROJECTION 1960-1975



**POPULATION INCREASE IN ONTARIO, CANADA EXCLUDING ONTARIO,  
AND ALL OF CANADA, BY CENSUS YEARS, 1871 TO 1951, AND  
BY YEARS, 1939 TO 1955**

Year	Population	Ontario		Canada Excluding Ontario		All of Canada		
		No. (000)	Increase Percent %	Population (000)	No. (000)	Increase Percent %	Population (000)	No. (000)
By Census Years, 1871 to 1951, Showing Decennial Increase								
1871	1,621	225	16.1	2,068	235	12.8	3,689	460
1881	1,927	306	18.9	2,398	330	15.9	4,325	636
1891	2,114	187	9.7	2,719	321	13.4	4,833	508
1901	2,183	69	3.2	3,188	469	17.3	5,371	538
1911	2,527	344	15.8	4,680	1,492	46.8	7,207	1,836
1921	2,934	407	16.1	5,854	1,174	25.1	8,788	1,581
1931	3,432	498	17.0	6,945	1,091	18.6	10,377	1,589
1941	3,788	356	10.4	7,719	774	11.1	11,507	1,130
1951 <sup>(1)</sup>	4,598	810	21.4	9,050	1,331	17.2	13,648	2,141
By Years, 1939 to 1955, Showing Annual Increase								
1939	3,708	36	1.0	7,559	79	1.1	11,267	115
1940	3,747	39	1.1	7,634	35	1.0	11,381	114
1941	3,788	41	1.1	7,719	85	1.1	11,507	126
1942	3,884	96	2.5	7,770	51	0.7	11,654	147
1943	3,915	31	0.8	7,880	110	1.4	11,795	141
1944	3,963	48	1.2	7,983	103	1.3	11,946	151
1945	4,000	37	0.9	8,072	89	1.1	12,072	126
1946	4,093	93	2.3	8,199	127	1.6	12,292	220
1947	4,176	83	2.0	8,375	176	2.1	12,551	259
1948	4,275	99	2.4	8,548	173	2.1	12,823	272
1949 <sup>(2)</sup>	4,378	103	2.4	9,069	521	6.1	13,447	624
1950	4,471	93	2.1	9,241	172	1.9	13,712	265
1951	4,598	127	2.8	9,411	170	1.8	14,009	297
1952	4,766	168	3.7	9,664	253	2.7	14,430	421
1953	4,897	131	2.7	9,884	220	2.3	14,781	351
1954	5,046	149	3.0	10,149	265	2.7	15,195	414
1955	5,183	137	2.6	10,418	269	2.6	15,601	406

**ANNUAL PERCENTAGE INCREASE IN POPULATION,  
ONTARIO, AND CANADA EXCLUDING ONTARIO, 1939-1955\***



\* For purposes of graphical presentation, Newfoundland's population is excluded from that of Canada

(1) Excludes Newfoundland.

(2) The large population increase experienced by Canada in this year was due to the entry of Newfoundland into Confederation on March 31. On June 1, 1949, Newfoundland had a Population of 345,000.

Three counties—York (including Metropolitan Toronto), Halton and Peel—contain an estimated 29.2 per cent of the Province's population. The counties south and west of these (but excluding Huron County) contain another 32.6 per cent of the total, so that in these southern counties is found nearly 62 per cent of Ontario's total population. The Ontario counties and districts north and west of Lake Nipissing contain 10.5 per cent of the population and the remaining counties extending east to the Ottawa River embrace 27.7 per cent. Recalculated in another way, 63 per cent of Ontario's population is contained in the area south and south-west of Lake Simcoe and nearly 90 per cent in the area south of Lake Nipissing. In the decade between 1941 and 1951, over 80 per cent of the population increase was in the area south and west of Lake Simcoe.

If the projections of Ontario's population, which are set out in Appendix I, prove reasonably accurate, the increase in population in the next 20 years will be about 60 per cent. These projections, which work out to an average annual rate of increase of 2.65 per cent in the first decade to 1965 and 2.49 per cent in the second decade to 1975, appreciably exceed the 2.14 per cent average annual rate of the decade 1941-1951 and the 2.21 per cent rate for the period 1901-1951. They do not, however, attain the remarkably high rate of 3.18 per cent average growth in the years 1951 to 1955.

The 3 million people which the projection adds to the population of Ontario in the next 20 years is to be compared with the 2.4 million increase which took place in the first half of this century. This is over twice the number (1.2 million) added in the 20 years, 1931-1951, and is almost as much as the increase in the population of Canada (3.6 million) in the same two decades.

As shown in Table 1, Ontario's pre-school population declined from 10.3 per cent of the total population in 1901 to 7.8 per cent in 1941 and then rose to 12.1 per cent in 1955; it is expected to continue in this range over the next 20 years. The school population which would be mainly represented by the 5-19 age group, declined in relative importance, falling from 31.6 per cent of the total in 1901 to 22.6 per cent in 1951. It has since begun to rise rapidly and 10 years from now is expected to compose nearly 29 per cent of the total population. The proportion of the population spanning the principal labour force age groups from 20 to 64 rose from 52.6 per cent in 1901 to 58.7 per cent in 1941. It has since declined to 55.5 per cent and over the next 10 to 20 years is expected to drop to about 51 per cent. The elder citizens group, comprising those 65 and over, increased in relative importance, rising from 5.5 per cent of Ontario's total population in 1901 to 8.7 per cent in 1951. By 1955, it had fallen to 8.5 per cent; however, it is expected to decline only slightly over the next 20 years.

**Table 1—  
Percentage Distribution of the Population of  
Ontario by Age Groups, 1901-1975**

Age Group	1901	1911	1921	1931	1941
	%	%	%	%	%
0- 4	10.3	10.4	10.3	9.0	7.8
5-19	31.6	28.4	28.6	28.3	25.5
20-64	52.6	55.5	55.2	55.9	58.7
65 and over	5.5	5.7	5.9	6.8	8.0
	100.0	100.0	100.0	100.0	100.0

Age Group	1951	1955	1965 <sup>1</sup>	1975 <sup>1</sup>
	%	%	%	%
0- 4	11.2	12.1	11.4	12.0
5-19	22.6	23.9	28.7	28.7
20-64	57.5	55.5	51.7	51.2
65 and over	8.7	8.5	8.2	8.1
	100.0	100.0	100.0	100.0

(1) Based on our forecast of population; other percentages quoted are derived from Dominion Bureau of Statistics estimates of population.

The arresting economic implications of our population projection are enhanced when its details are examined. Not only would the total population rise by almost 60 per cent, but the number in the school age group of 5-19 years would be 90 per cent greater than at present. Over 40 per cent of the population would then be under 20 years of age, compared with 34 per cent in 1951. Ontario would have a population almost as youthful as in the great years of expansion when the century began. However, because of the relatively slow rate of population increase in the 1930's, the percentage of the population in the productive ages, 20-64, and in the over 65 group would be somewhat smaller than in 1955.

Some of the most pressing and perplexing implications of these possible population trends will be examined in later chapters.

### LABOUR FORCE

Trends in the labour force follow more or less closely those of the population as a whole. Changes in the relation between the two arise from variations in the proportion formed by the fourteen year and older age group in the total population and from the changing percentage of this group forming part of the labour force from time to time. Recruitment of women is the most important variable. The trend to longer years of schooling tends to reduce the number of young people entering the work force, while better financing of retirement lowers the age at which the older workers tend to leave it.

As the settlement of the prairies and the development of the wheat economy went on in the first three decades of the present century, Ontario's labour force fell as a percentage of the Canadian labour force. Agri-

cultural difficulties during the 1930's and the war and post-war stimulus to manufacturing reversed the trend, bringing Ontario's share back by 1954 to 37 per cent, comparable to the high levels of 1911. In its share of the labour force as in its share of the Canadian population, Ontario is a most important part of the national economy.

The remarkable increase since the beginning of the century in the proportion of women in the labour force is perhaps the most conspicuous feature of Ontario's labour force statistics. The emancipation of women and the growing variety of industrial, clerical and professional occupations open to them, together with the inability of the daughters of urban dwellers to add to the family income by working at home, as they do on farms, are the main factors responsible for this trend. In recent years, the proportion of women in the labour force has been raised mainly by the growth in the number of working wives. Together with non-economic factors, this trend is probably a reflection of the failure of many married women to find satisfactory productive activity in the modern urban home or apartment. It is possible that the increasing participation of women in work outside the home reduces somewhat the ease with which the working force may be expanded by the absorption of women in time of war or national emergency.

The rising proportion of women in the labour force is probably the main factor in causing an increase in the proportion of the population found in the labour force, though immigration has always added relatively more to the labour force than to the population. The factor which has overcome the cumulative effect of both these influences and brought about a fall in the proportion of labour force to population in Ontario is, of course, the startling increase in the birth

<sup>1</sup> See Appendix II for more extensive details.

rate and, as a result, in the proportion of very young persons in the population. The lengthening of the period of education and the increase in early retirements which prosperity brings has also reduced the relative size of the labour force.

These are also the factors which bring it about that though the projected Ontario population at 1975 is almost 60 per cent, and the school population 90 per cent, above present levels, the labour force projection shows an increase of but 50 per cent. Although recent Canadian immigration has mostly come to Ontario and the number of women working outside the home grows, the relatively low level of births in the 1930's is now reducing the influx of young people into the labour force sufficiently to reduce the proportion of the labour force in a provincial population being greatly expanded by natural increase. This trend is expected to continue till about 1965, when the labour force to population ratio will stand at 36.4 per cent, a lower percentage than has occurred since 1901. Thereafter, the ratio will rise rapidly, however, as the young born in recent years in such great numbers begin to enter the labour force. For the next decade or so, therefore, the productive part of the population of Ontario will form a smaller proportion of the whole population, and the non-productive proportion of the population for which it has to provide will be relatively larger.

The most spectacular change in the importance of the jobs at which people work in Canada has been the relative increase in non-agricultural occupations since 1921. Until the census of that year, about one-third of the Canadian labour force was in agricultural employment. Indeed, the agricultural population grew until 1931, but in that year a decline got underway which has gone on ever

since. It results from several factors: the increased use of mechanical and electrical equipment, the adoption of more scientific methods, and increased application of commercial fertilizer, all of which trends have been accelerated in the last decade. By greatly increasing the output per man, this change permits the growing food demand in western countries to be supplied by a smaller number of people at work on the land.

In Ontario, the number of persons employed on the land showed a remarkable stability, at about 300,000, for the first 30 years of the century. Since then, the trend has been downward. Only about two-thirds of the labour force and four-fifths of the farm operators employed in agriculture a quarter century ago are now so employed, though farm output is substantially higher. Recently, the decline ceased, however, and the 1954 figure rose sharply. That the great movement of Ontario farmers westward when the prairies were opening up should have prevented Ontario's agricultural population from rising with that of Canada is not surprising; it was to have been expected also that the mechanization and electrification of farming should have reduced it in the last two decades. The most intensive phase of that process is probably over, however, and the reduction in farm population may well have been halted, particularly in those areas where agricultural production is being adapted to the demands of the growing industrial population.

In Canada since the Second World War and in Ontario since the 1930's, manufacturing has been the largest employer of labour amongst the commodity industries of the country. Now, nearly 60 per cent of the total number at work in commodity production in Ontario are engaged in manufacturing. The percentage of those employed in

manufacturing has increased much more rapidly than in the rest of Canada. Although mining and forestry are not relatively large employers of labour, they provide a valuable counterbalancing labour demand during the winter months. This is especially true of logging, which complements farming in the northern areas.

## POWER AND FUEL

### Introduction

Of the importance of cheap power to the continued development of a manufacturing region, there was no question in the minds of those who, in the past, gave such effective leadership to the citizens of this Province in the creation of the great Hydro-Electric power system. Few today would deny them all credit for their far-sightedness. Ontario needs all the power that can be developed from its hydro-power resources and will probably absorb at an unexpectedly rapid rate the additional increment which is promised by 1960. Other sources of power such as oil, natural gas and nuclear energy are also being developed. Research in the production of power from nuclear materials is being supported by the Ontario Hydro-Electric Power Commission and the Provincial Government.

### Ontario Hydro

Few aspects of the many-sided program for the development of the Ontario economy which the government of the Province must undertake are more important—or likely to be more expensive—than this of providing our industries and people with the cheap power on which the success of their productive efforts so much depends.

Set up by Legislative Acts in 1905 and 1906, the Commission has enjoyed a remarkable growth. In 1910, the municipalities signed the first contracts with the Commis-

sion to consume a total of 4,000 kilowatts (5,360 h.p.). In 1955, the Commission's customers—municipal, industrial and rural—required more than 4.2 million kilowatts, equal to over 5.6 million horsepower. The Commission and local Hydro utilities now serve more than 1½ million customers.

The expansion of the Commission's own generating capacity has been particularly rapid in the last 10 years. In this period, 9 new hydro-electric and 2 major fuel-electric generating sources have been brought into operation and, in addition, 4 other hydro-electric developments, including those at Niagara and on the St. Lawrence, are under construction. In terms of dependable peak capacity, these new resources have resulted in an increase in the Commission's own generating capacity from 1,230,000 kilowatts (1,648,000 h.p.) in 1945 to 3,846,000 kilowatts (5,154,000 h.p.) in 1955. Thus, in the past 10 years, the Commission has trebled its own generating capacity, building twice as much in this period as in the previous 35 years of its existence. This is a remarkable achievement. By this post-1945 expansion, the Commission has not only met the domestic lighting, water, heating and cooking requirements of a rapidly growing population, but it has also supported upwards of a doubling of our industrial capacity in manufacturing, mining and forestry and brought incalculable benefits to agriculture. Moreover, the program is continuing. In the next 5 years, additional generating capacity of 1.5 million to 2.2 million kilowatts will be placed in service, equivalent to that constructed in the first 41 years of Hydro's existence. By 1960, the Commission's own generating stations will produce 5.3 million kilowatts, or 6.6 million horsepower.

This capital expansion has been financed through the issue of debentures, either by

the Province directly or by the Commission, whose debentures have been guaranteed by the Province as to principal and interest. As a result of the greatly expanded construction program of the past decade, the Province has pledged its credit, by issuing its own debentures or guaranteeing the Commission's, to a total of nearly \$1 1/4 billion. Recent capital expenditures of the Commission are shown in the following table.

**Table 2—**  
**Capital Expenditures on Construction, Ontario**  
**Hydro-Electric Power Commission,**  
**1946-1955**

Fiscal Year Ended	Capital Expenditures
Oct. 31, 1946	\$ 19,586,000
1947	45,837,000
1948	90,677,000
1949	150,116,000
Dec. 31, 1950 <sup>1</sup>	171,480,000
1951	164,618,000
1952	162,831,000
1953	183,635,000
1954	132,818,000
1955	110,000,000
Total	\$1,931,598,000

(1) In 1950, the Commission changed its fiscal year-end from October 31 to December 31. The fiscal year in 1950, then, was 14 months.

Over the period 1922-1955, the Commission's primary power requirements increased at an average rate of 6.56 per cent per annum. Growth was somewhat more rapid until 1930, when a decline occurred which in turn was followed by a period of slowly accelerating growth until 1941. In the following years, when loads were subject to wartime restraints, demands alternatively spurted ahead and levelled off. After 1945, when the Commission was able to embark on new power generating projects, power loads advanced at a rapid rate.

Looking ahead, the Commission has made projections on two bases. As far as 1960, the upper projection is assumed to be at the rate

of growth of 8.21 per cent per annum experienced between 1950 and 1955, while the lower projection is based on a rate equivalent to 5.50 per cent per annum. After 1960, both projections assume a rate of growth of 6.56 per cent per annum, the long-term rate of increase from 1922 to 1955. Thus, on the higher estimate, primary power requirements will be 6.2 million kilowatts (8.3 million h.p.) in 1960 and 21.9 million kilowatts (29.3 million h.p.) in 1980. On the lower estimate, these requirements will be 5.4 million and 19.3 million kilowatts (7.2 million h.p. and 25.7 million h.p.) respectively.

In view of the gradual exhaustion of the Province's own large hydraulic sites—only 6 of the remaining hydro-electric potential sources of power will exceed 50,000 kilowatts—the Commission, in the future will be turning increasingly to other alternatives. While an addition to the Richard L. Hearn generating steam plant at Toronto is being projected, emphasis in the future will be upon nuclear power and it is anticipated that by 1965 a significant part of the required additional capacity will be provided from this source.

### A Trans-Canada Natural Gas Pipe Line

The discovery of massive quantities of natural gas in Western Canada has been viewed with interest and gratification in all parts of Canada. It is considered that insofar as possible these resources should be utilized in such ways as will best serve to promote national growth and well-being. The Government of Ontario has taken the position that an all-Canadian pipe line should be built and it is prepared to co-operate in a tangible way to obtain this objective. With this in mind, the Ontario Government has entered into an agreement with the Government of

Canada, which in turn has made an agreement with Trans-Canada Pipe Lines Ltd., for the construction of an all-Canadian gas pipe line to serve both northern and southern Ontario markets. The agreement provides for the construction of the northern section from the Manitoba boundary to Kapuskasing by a Crown corporation and the leasing of this section to Trans-Canada Pipe Lines Ltd. If the company fulfills the necessary requirements, Ontario's contribution will be one-third of the cost of construction of this northern Ontario section up to a maximum of \$35 million.

The plan calls for the construction of a 30-inch diameter line, which would bring natural gas from Alberta to Ontario and Quebec and would be capable of a throughput of 193 billion cubic feet of natural gas. This is equivalent to 9 million tons of coal or 37 million barrels of oil per year. When it is constructed, it will serve not only the densely populated markets of southern Ontario but also the industries and population of northern Ontario which are lacking in adequate supplies of fuel. A long-term firm supply of reasonably low cost fuel and power will contribute immeasurably to the development of the resources of those areas. In the more heavily populated and industrially concentrated southern part of Ontario, it will afford an abundant source of heat and energy, supplementing and reinforcing the available and growing supplies of electric power and oil. Such a supply will lower the degree of our dependence on other countries and thus fortify us in times of emergency. It will also afford a useful supplement and in some instances, particularly for cooking, water-heating and room-heating purposes, will serve as an alternative to electric power.

The massive quantities of the natural gas throughput will give further encouragement

to the location and expansion of heavy fuel consuming industries, among these the petrochemical industry. It is estimated that the construction of the pipe line project, together with the gathering and distributing systems, will entail an overall expenditure of over \$1 billion, of which approximately half will be spent in Ontario.

## AGRICULTURE

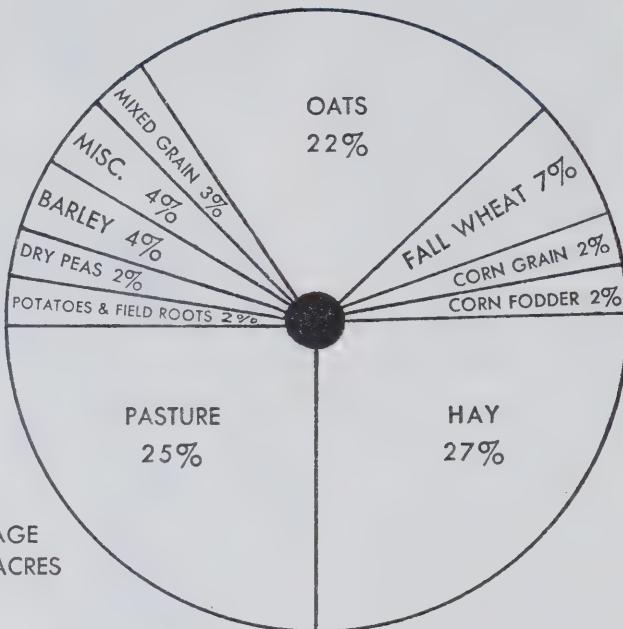
As a result of international developments, the growth of our domestic market, mechanization and new scientific methods, the structure of Ontario agriculture has changed greatly over a quarter of a century. In 1931, Ontario had 192,000 farms. By 1951, this number had dropped to 150,000—a decrease of 22 per cent. An appreciable part of this decline occurred in farms close to cities and other areas of community development. Part of it was accounted for by the uniting of farms to obtain a better operating unit. The greater part of the decrease, however, was in farms abandoned, at least in the sense that the owners had lost interest in working them fully to obtain a living. In many of these cases, the operator is still living on the farm, but he has ceased to cultivate it. The largest areas abandoned are located far from urban markets and particularly where land is hilly or stony or in small patches which do not lend themselves to mechanical operation. The decline in the number of farms and farm operators and the even larger decline in agricultural employees reflect the competing attractions offered by the manufacturing and service industries.

Although land use has remained largely as it was nearly half a century ago, the technique of farming and work methods employed has changed radically. Because of Ontario's relative advantage over Western Canada in

## MAJOR USE OF CROP LANDS IN ONTARIO

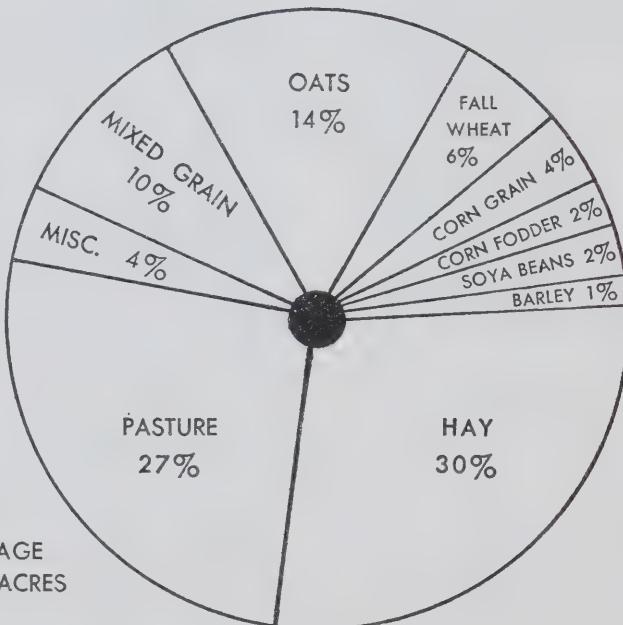
1911

TOTAL ACREAGE  
12,675,000 ACRES



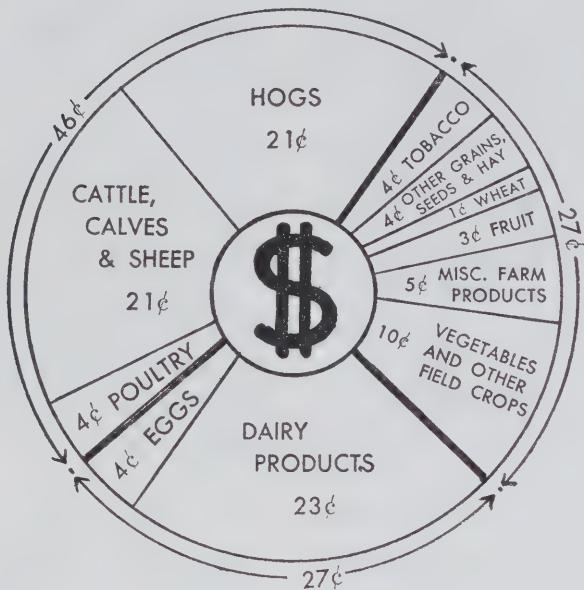
1954

TOTAL ACREAGE  
11,677,000 ACRES

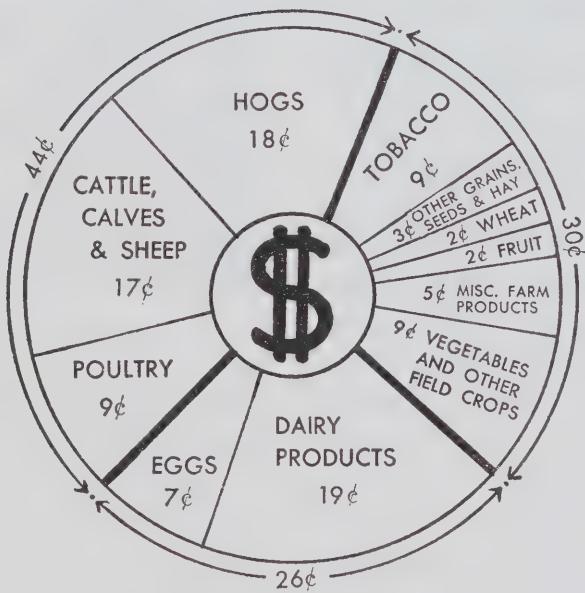


## THE SOURCE OF THE ONTARIO FARMER'S CASH DOLLAR, 1941 AND 1954

1941



1954



producing forage crops and the strong competition from the West in growing grains, over a half of our rotation crop land is in grass and legumes. Some important shifts have, however, occurred; one is the reduction in the planting of dry peas and field roots. Peas have been replaced by commercial protein concentrates in feeding practices and field roots have been displaced by other feeds which do not take so much hand work to cultivate. Another shift has been from oats to mixed grain; as well, there has been a substantial increase in the quantity of soya beans raised. Tobacco has become a major cash crop in a number of areas. Animals and animal products now account for 70 per cent of farm cash income.

Another of the characteristics of the new Ontario farm is the marked tendency towards specialization. Many farmers are now concentrating upon one crop or upon one division of the industry, such as a type of livestock. We find fewer farms keeping sheep, swine or cattle, even though the total numbers remain relatively constant. For instance, in 1951, the number of farms reporting the raising of livestock was 121,000, as against over 150,000 just a decade earlier.

Export markets have always been an attraction to Ontario farmers, but the domestic market has gradually been absorbing an increasing proportion of Ontario's farm production. For example, cheese dropped from an export of over 100 million pounds during the Second World War to a position in 1955 where there was no surplus over domestic consumption. The total output of the dairy industries has remained fairly constant over many years, but the percentage of milk going into domestic fluid sales has risen substantially. This has been the effect of urban population growth. The Ontario farmer

finds that his greatest advantage lies in the production of products like fluid milk and fresh meat, fruit and vegetables, which are both bulky and perishable. He has located close to the urban communities which provide the best markets for this kind of product and where the Province's highways and railways afford speedy, low cost transportation, which such produce requires. Here, prices are better because of more limited competition. On the other hand, the more concentrated products, such as butter and cheese—which can be shipped long distances economically—give Ontario producers less advantage.

Aided by good crops and rising prices, net farm income in Ontario rose rapidly during and immediately after World War II, increasing from \$132.2 million in 1940 to \$558.2 million in 1951, or about 4 times. In the same 11 year period, the consumer price index had not quite doubled; hence, farm operators enjoyed a period of recovery from the highly competitive conditions of the 1930's and were able to rehabilitate buildings, retire debt and make some progress toward realizing the amenities of urban living. However, since 1951, Ontario's net farm income has dropped to about \$380 million, or 32 per cent. This decline has brought a train of difficulties, particularly to some sections of the industry. The fluid milk producers have been in a reasonably satisfactory position, as have those farmers who have been able to specialize in certain cash crops, such as tobacco and corn, where the acreages involved are not relatively large and are mainly concentrated in a few areas. For many other farm operators, it has been a time of adjustment and of testing—seeking improved methods of production and marketing.

The efforts to reduce unit farm costs have been immensely assisted by the increased use

of mechanical and electrical machinery and equipment. The fact that farm labour costs have increased 4 times since before World War II, while the cost of machinery, gas and oil has less than doubled, has accelerated this trend toward more mechanization and electrification. In only 10 years—from 1941 to 1951—the number of tractors on Ontario farms tripled, while the number of grain combines increased by 13 times.

The extension of rural electric power service has been a major factor not only in reducing farm costs but also in bringing the amenities of the urban centres to the country. The growth in facilities, number of customers served and load supplied has been truly remarkable since 1945. The number of miles of primary line has doubled in the last 10 years, while the total number of customers serviced has doubled in only the last 7, reaching 419,000 at the end of 1955.

The wider use of electric equipment on the farm is clearly shown in the fivefold rise in electric power consumption by farm service customers in the decade 1944-1954. Back in 1930, fewer than 20,000 farmers were supplied with hydro-electric power; now, there are nearly 150,000. In pursuance of its policy of assisting agriculture, the Ontario Government contributed \$99 million toward the capital cost of these facilities during the past 35 years; of this amount, \$77 million was provided in the last 10 years.

Despite the loss of 27 per cent of its agricultural workers since before World War II, the physical volume of Ontario farm production has increased by 28 per cent. Output per agricultural worker in Ontario in 1954 was therefore about 75 per cent higher than 15 years ago. Besides the increased use of mechanical and electrical equipment, the more liberal use of fertilizers, larger farms and the abandonment of some low produc-

tivity farms have all contributed to this outcome.

Important as other industries and services have become in Ontario, agriculture is still basic to our whole economy. It provides not only life-giving food for our population, but it also supports a substantial portion of our manufacturing and commercial enterprise. Bread and other bakery products is one of the Province's important manufacturing industries, yet all its raw materials are agricultural in origin. The same is true of the meat packing industry. Fruit and vegetable product preparation, butter and cheese manufacture, flour milling and the manufacturing of processed feed for stock and poultry are other examples of manufacturing industries which could not provide the employment and income they do, were it not for the raw materials produced on the farm. Distilling, brewing and wine making, tanning and leather fabrication are all important secondary industries dependent on agriculture. The food and beverage industries in Ontario have a selling value of output of about \$1.5 billion annually, illustrating the interdependence of agriculture with other industries such as manufacturing, forestry, and commerce, including transportation, insurance, financing and retailing services.

Today, although agriculture is in a better supply-and-demand balance than it was during the 1930's, it does face real problems in making adjustments. An additional complication is that the majority of practising farmers have entered the industry since 1945 and many do not have the resources to survive a prolonged cost-price squeeze. The adjustments required can only be brought about and agriculture take its full part in the country's economic progress if farm operators are helped by suitable policies of

adequate research, advisory services and encouragement given through improved marketing on a long-term program.

### MINING

The Province of Ontario is very fortunate in that her boundaries include not only the rich agricultural plains of southern Ontario, but in the northern part of the Province a very important part of the Canadian Shield. Today, there is being uncovered in the north very rich deposits of iron, copper and uranium which promise a great increase in mineral production in the Province in the future.

The Province's mineral wealth lies not only in the present and the future; that section of the Canadian Shield which lies within the Province has been its richest in the past. Since gold production in the Klondike petered out, most of Canada's gold has come from Ontario. Our base metals were important a decade before gold, roughly equalled it in value between 1925 and 1940, and now have far outrun it in value of output.

The combination of base metal and gold production has been a fortunate one for the Province, because their fluctuations in production offset each other and so produce a remarkably steady growth curve for total mineral production. Through the First World War, the prosperity of the 1920's and the depression of the 1930's, mineral production advanced without a major check until the start of the Second World War. Since 1945, the rate of advance attained has been equal to the remarkable rate achieved in the late 1930's under the stimulus of the European rearmament demand and the electrifying effect upon the gold industry of President Roosevelt's action in raising the price of gold from \$20.67 to \$35.00 an ounce in 1934. The

arms race has played its part in the recent rate of advance as in the 1930's; however, prospects of a stimulus to mining from a second great rise in the price of gold are, for the present, dim.<sup>1</sup>

Total mineral production in Ontario rose in value almost continuously, with the exception of the early 1930's and 1940's, from slightly under \$56 million in 1921 to over \$500 million in 1954; while the value of metallic mineral output rose during the same period from under \$29 million to over \$395 million. Gold output stood at \$16 million in 1921 and rose almost without check to over \$125 million in 1940. Then began a decline to \$66 million in 1946. Since that time, its value has fluctuated between \$75 million and \$95 million.

The most spectacular rise in value of production, as far as the Province's metallic minerals are concerned, has been in nickel. Ontario's value of production of this metal has increased irregularly over the years. In 1921, nickel output was \$4 million; in 1943, over \$71 million; it dropped to \$45 million in 1946; since then, it has been rising most pronouncedly, reaching \$177 million in 1954. The trend in Ontario's copper output has followed a somewhat similar pattern. In 1921, the value of Ontario's copper output was approximately \$1 million; in 1930, it was over \$14 million; then came slump, recovery, and a decline during the latter years of World War II. After the war, the value of copper output rose sharply from under \$23 million in 1946 to over \$81 million in 1954. Iron ore, a relatively new major factor on the Ontario scene, has also been exhibiting a healthy rise in value of output, increasing from under \$4 million in 1945 to over \$20 million in 1954.

<sup>1</sup> Report of the Committee of Enquiry into the Economics of the Gold Mining Industry in Ontario, 1955.

Among the principal non-metallic minerals and fuels in Ontario are salt, asbestos, nepheline syenite, and natural gas; all of these together had a value of \$7 million in 1921 and over \$26 million in 1954. The output of structural materials—sand and gravel, cement, stone, clay products and various other building materials—totalled about \$19 million in 1921 and over \$82 million in 1954.

That the world demand for base metals will grow rapidly is very probable, even apart from the military demand. Certainly, the conclusions reached in the United States by the Paley Commission lend support to this contention. As regards some of the more important metals produced in Ontario—namely nickel, copper and iron ore—the authors of the Paley Report forecast that the demand in the United States for nickel will, in 1975, be 100 per cent greater than in 1950; for copper, 43 per cent greater; and for iron ore, 54 per cent greater. Then, according to the same Report, the demand for nickel generated by the rest of the free world will be 100 per cent greater in 1975 than in 1950; 54 per cent more in the case of copper; and 73 per cent higher for iron ore. These increases in the demand for base metals in the United States and elsewhere cannot but fail to have favourable effects upon the level of mineral output in Ontario; thus, when the new uranium production is taken into account, the Province is undoubtedly assured of a high and rising level of mineral production, whatever may be the fate of gold.

The future of gold in Ontario is obscure, but not so immediately alarming as is sometimes assumed. Though caught in a most difficult operating position between rising material and labour costs and a stable gold price, the industry has succeeded, by a high level of investment, in making a very great advance in the mechanization of its mining

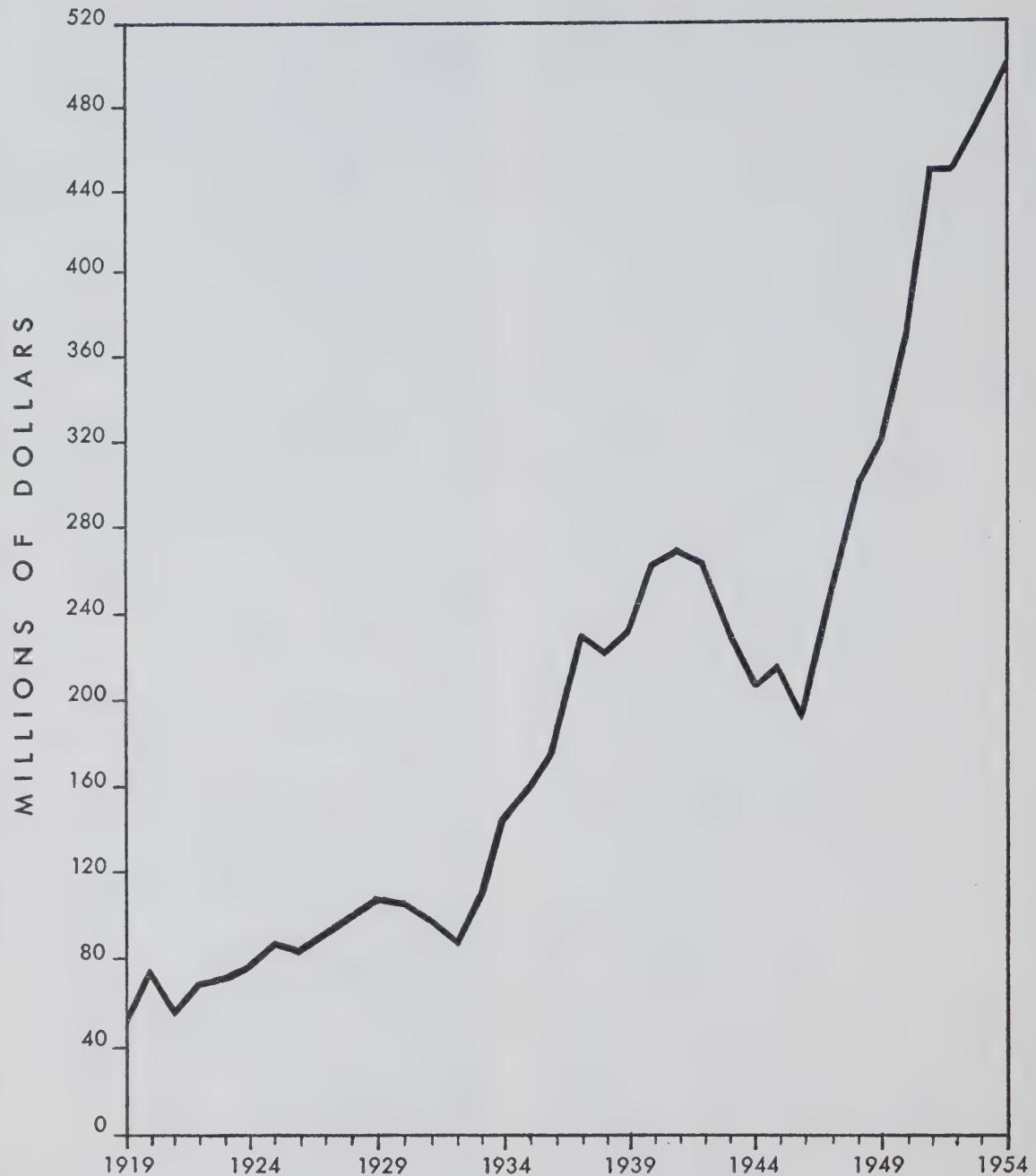
processes. In this way, the rise in the cost of mining per ton has been arrested since the end of the war, despite a substantial increase in average annual wages and in the cost of materials. Even under present cost conditions (and not forgetting the very material assistance coming to Ontario gold mines from the Federal Treasury under the Emergency Gold Mining Assistance Act) there is much mineable gold in the historic Porcupine and Kirkland Lake camps and elsewhere in northern Ontario. Time is thereby available to find a new foundation for the economic life of the gold mining communities.

In all probability, that will eventually be necessary. Unless the price of gold is raised, there will be no encouragement to further extensive prospecting; money is more profitably invested in the search for other minerals. Nor is it clear whether the renewed exploration which a substantial increase in the price of gold would produce would be as productive of new mines as in the 1930's. Many known ore bodies now of little value would by such a price rise become mineable; in addition, new mines might well be found. But there is no present evidence that the great discoveries of the past would be repeated.

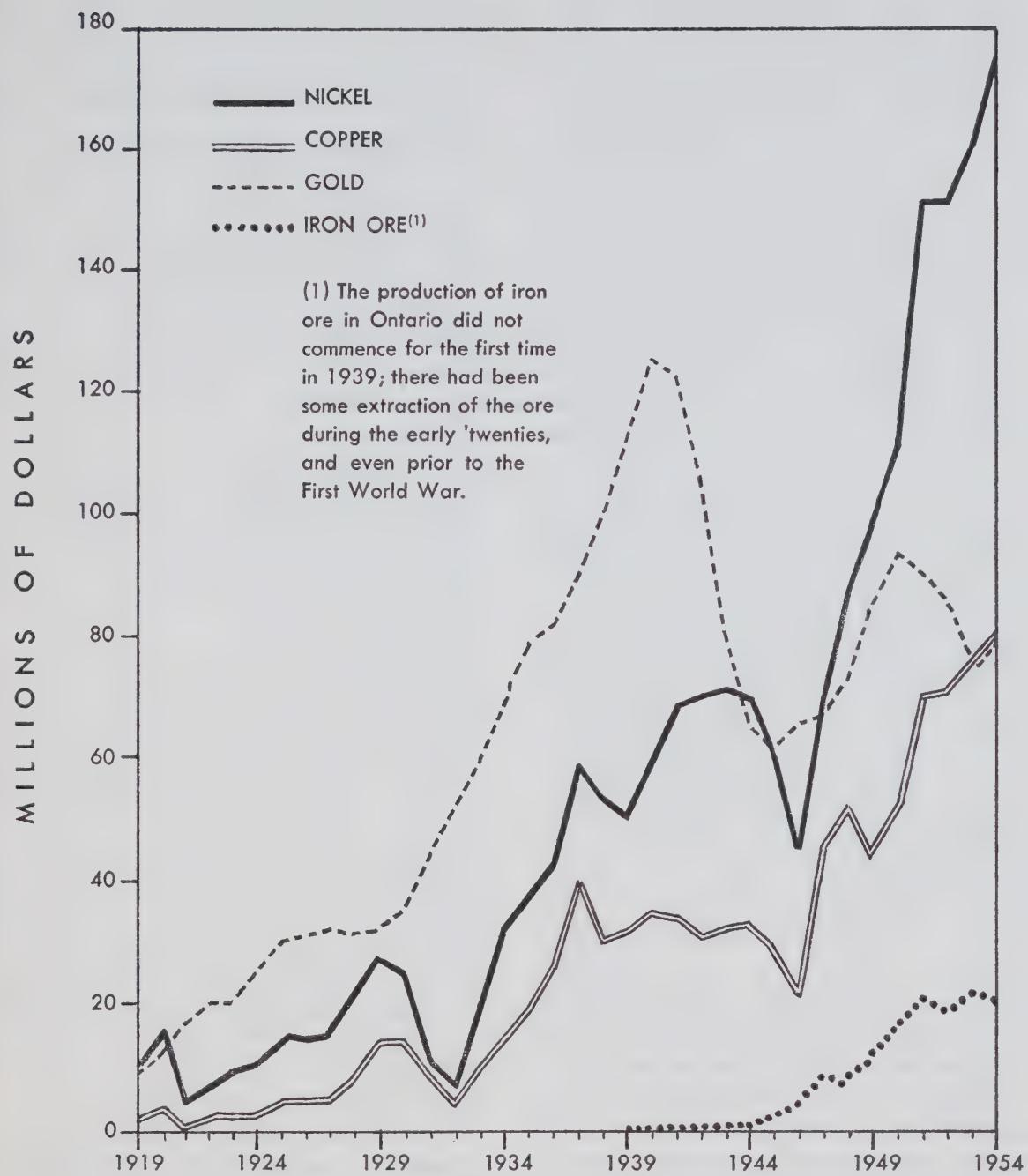
The value of Ontario's gold output, however, is today only 16 per cent of the Province's total mineral production and 21 per cent of metal production. Gold has surrendered its primacy of place to nickel and is rapidly yielding ground to copper. The former now accounts for almost 45 per cent, by value, of metallic mineral production, while the latter currently amounts to over 20 per cent of metal output.

To speak of nickel and copper production in Ontario is, indeed, to speak of the Sudbury Basin. It is this area which is the source of over 85 per cent of the free world's known

TOTAL VALUE OF MINERAL PRODUCTION IN ONTARIO,  
1919-1954



VALUE OF PRODUCTION IN ONTARIO OF NICKEL,  
COPPER, GOLD, AND IRON ORE, 1919-1954



output of nickel and almost half of Canada's total copper production. Moreover, the Basin is one of the world's largest producers of platinum. Then, too, the Sudbury region, along with the Cobalt area in Timiskaming, has established Ontario as the only cobalt-producing province in Canada.

The Sudbury Basin undeniably looms large in the Ontario copper production picture, but certain other areas are also displaying highly promising copper potentialities. The most important of these regions is the Manitouwadge Lake area north of Lake Superior. Indeed, this is the region which may claim the greatest of the more recent base metal discoveries in Ontario. Not only have large deposits of copper been discovered in the area, but deposits of lead and zinc and some silver have been outlined. A high-grade copper deposit has been discovered on an island in Temagami Lake; production commenced there this year. Other copper deposits in Ontario include the one at Maimainse Point, north of Sault Ste. Marie, and that near Kashabowie, west of Fort William.

Iron ore, too, has been receiving immensely greater attention of late. The present era of expanding iron ore output really dates from 1939, although some extraction of ore took place in the Province during the early 1920's and even prior to the First World War. In 1939, however, the New Helen mine in the Algoma district was opened and, since that time, the output of iron ore has been almost continuously increasing — most especially since 1948. Algoma has remained important in iron ore production during the current expansion phase, but an even greater contributor has been the fabulous Steep Rock range in the northwestern part of the Province. Very recently, moreover, production of iron ore began from a new source—the Marmoraton mine in eastern Ontario.

The anticipated yield from this property has been set at well over one million tons per annum. Yet another development of importance for the future of iron ore production in Ontario was the International Nickel Company's announcement in 1953 that it had evolved a process for extracting high-grade iron oxide from the indigenous nickel-copper ores of the Sudbury Basin. The first unit of the plant being constructed for this purpose has already been completed. The company plans to extract as much as one million tons of this high-grade iron oxide ore annually. Additional sources of iron ore in the Province are the various deposits of magnetite, among which may be mentioned that at Calabogie in Renfrew County and the one near the Goulais River, north of Sault Ste. Marie.

The volume of output of iron ore from the present producers, along with that of by-product ore from the treatment of sulphides, indicates that by about 1960 Ontario will be producing iron ore at the rate of over 14 million tons annually.

The greatest addition, in recent years, to Ontario's known mineral wealth has been the discovery of widespread deposits of uranium. In fact, it may be said that the extent of the uranium ore reserves already outlined in the Province, together with the presently indicated further reserves, have made Ontario the possessor of the largest known uranium deposits in the world. The principal focal point of the search for uranium in Ontario has been the Algoma district, particularly the area east of Blind River; but another rich source of uranium is being developed in the vicinity of Bancroft, in eastern Ontario.

The actual production of uranium in Ontario got under way in September, 1955 —and thus began a whole new phase in Ontario's mining history. What this phase

will mean in terms of economic development in general and of actual capital investment in particular is already becoming apparent. To date, about \$100 million has been invested in the Algoma-Blind River area alone—this aside from the very substantial amounts of public funds that have been expended. As regards the latter, mention might be made of the approximately \$1 million which Hydro has spent in the area, the Province's commitment to share in the outlay for a new model town to be built at Elliot Lake to serve the mines in the area, and the construction (already begun) of a permanent highway to serve both the new town and the mines. Yet another indication of how large a place uranium will occupy in Ontario's mining economy and in the economy of the Province as a whole is the value of the production-purchase contracts that the Federal Government has already placed with Ontario mines for ore to be delivered prior to 1962; so far, these contracts total more than half a billion dollars and the amount is increasing.

Turning now to Ontario's non-metallic minerals, three such minerals of some importance to the Province are salt, asbestos and nepheline syenite. As regards salt, the second largest rock-salt mine in Canada is located near Windsor. The Province has only one operating asbestos mine, that near Matheson, but other substantial deposits of asbestos are known to exist elsewhere. As for nepheline syenite—a compound of particular use to the ceramic industry—Ontario enjoys a North American monopoly of this substance.

### **FORESTRY**

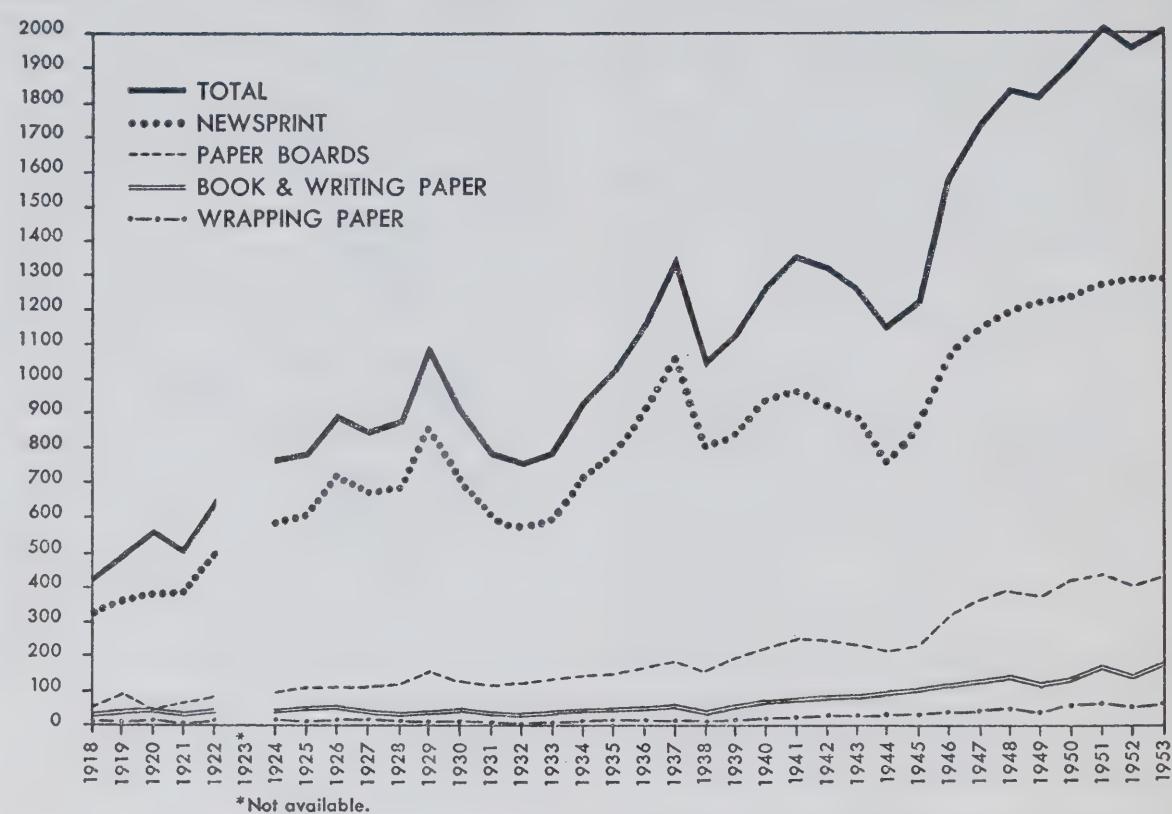
In mining, problems of future production are mainly those of supply—the physical or economic exhaustion of ore bodies. Supply is a less serious problem to the forest products

industries. Ontario's inventory of standing timber reveals that the Province is in possession of exceedingly vast timber resources, which, if wisely managed, will sustain high levels of forest output indefinitely. The Ontario government, therefore, adheres to a program of limiting the annual cut of each tree species to an amount which will not upset the proper "age distribution" of the trees, upon which the regularity of future supply depends. Then, too, the building of access roads facilitates the taking of this permitted amount from all cutting regions, thus tending to reduce an important but hidden cause of waste—the decay of mature timber ready for cutting. Other important props for an expansionist forest production policy are, first of all, the existence within the Province of enormous reserves of jack pine and poplar—at present, the actual cuts of both these species are considerably below their allowable cuts; secondly, the growth in the output of sulphate pulp—a pulp whose manufacture makes use of substantial quantities of jack pine; and, thirdly, the development of certain new processes in the pulp and paper industry, especially the semi-chemical and chemi-groundwood pulping processes—these will provide important uses for poplar and other so-called lower grade hardwood species. It is to be remembered, of course, that the most important demand, from the point of view of volume, made upon Ontario's forest resources comes from the pulp and paper industry.

Based upon the forest resources of Ontario is an important lumber and wood-using group of industries and a huge and growing pulp and paper industry. The total value of "basic" wood products manufactured in Ontario—lumber, veneers and plywood, laths, shingles, fuelwood, ties, poles, posts, mine timbers and certain other minor products of the forest—

Thousands  
of Tons

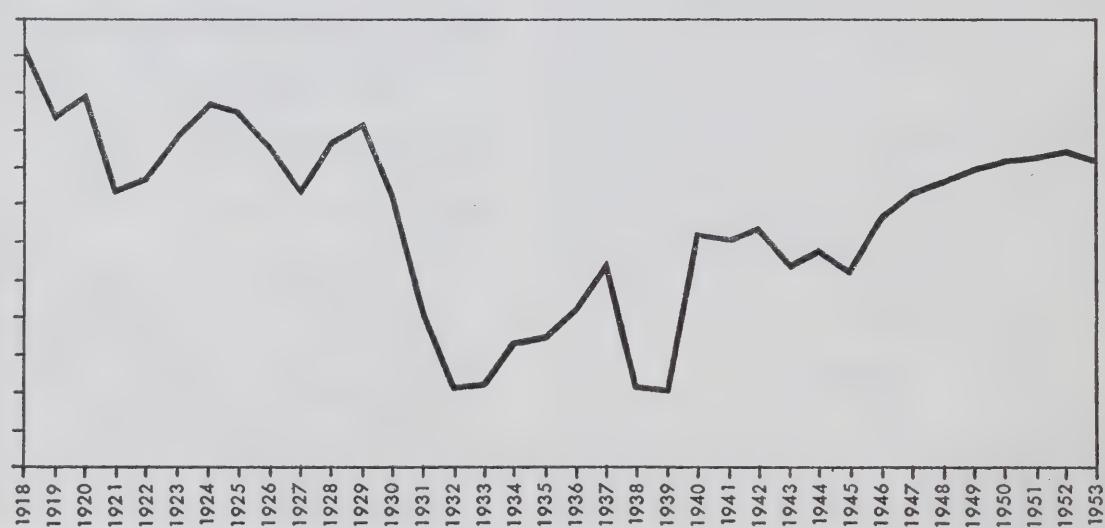
### PAPER PRODUCTION IN ONTARIO, BY VOLUME, 1918-1953



\*Not available.

Millions  
of Feet  
Board  
Measure

### VOLUME OF LUMBER MANUFACTURED IN ONTARIO, 1918-1953



was \$104.9 million in 1953. Chief among these basic wood items is, of course, lumber. The gross value of lumber output in Ontario was less than \$24 million in 1945 but, by 1954, it had increased to \$63.3 million, because of higher prices and an increase in volume from slightly under 674 million feet b.m. in 1946 to over 800 million feet b.m. in the early 1950's. The manufacture of veneers and plywood is becoming increasingly important in Ontario, rising in value to \$13.5 million in 1953.

The volume of pulp manufactured in Ontario was, in 1954, approximately 2.4 million tons, nearly two and a half times the production in the middle 1920's and one-third higher than in 1946. The increase in the value of pulp production has been even more precipitous. In 1946, the gross value of pulp produced in Ontario stood at \$84 million, while by 1954, it had increased to over \$183 million.

The value of Ontario's paper output rose from about \$86 million in 1945 to \$272 million in 1954, an increase of almost two and a half times in 9 years. The most important paper item manufactured in Ontario, newsprint, rose in value from under \$50 million in 1945 to over \$148 million in 1954. The value of Ontario's output of manufactured paper boards, book and writing paper, wrapping paper and tissue paper has also showed a steep rise since the end of the war. Paper board output rose from \$14.4 million in 1945 to \$52.6 million in 1954, and that of book and writing paper from \$13.4 million to \$41.6 million. During the above period, Ontario's wrapping paper production rose from \$4.8 million to \$16.1 million and that of tissue paper from \$2.3 million to \$10.9 million.

The lumber and wood-using group in Ontario will undoubtedly continue to face

competition from various non-wood products for uses traditionally reserved for wood products. For example, in building of all sorts, a wide variety of substitutes for wood is in growing use. Even in the manufacture of household furniture, the supremacy of wood is being challenged. This competition from non-wood products arises from the accelerating speed of technological change; but technological change, together with various other factors, has enabled wood to reply, frequently with an amazing degree of success, to its non-wood competitors. As far as lumber manufacture is concerned, a new process has been developed for bonding together pieces of lumber. By this process, small pieces may be glued together to form panels of almost any desired size. Given the spread of this innovation, the sawmilling industry should find itself in a position to utilize much of the "smaller material" which often goes to waste. And, as regards waste, or more specifically, mill shavings, mention should be made of the development of synthetic lumber, a product compounded principally of pressed shavings. Already, the furniture industry has indicated an interest in this synthetic lumber.

Turning to the over-all outlook for the products of sawmills, and plywood and veneer mills, present indications point to increases in demand for these products. The Stanford Research Institute, in a report on the future demand for wood in the United States,<sup>1</sup> predicts that while the production of lumber will increase only moderately by 1975, major increases are in store for the output of both plywood and veneer. This is not to say, however, that the future of lumber is somewhat less than secure; indeed, this is far from being the case. The principal demand for wood as lumber comes from the various sectors of the construction industry, and the total value of

<sup>1</sup> America's Demand for Wood, 1929-1975.

construction in Ontario has been rising continuously since 1939. This has been especially the case with residential building; and it is this sector of the construction industry which is the most important single consumer of lumber. Thus, although the consumption of lumber per dwelling has probably declined somewhat, lumber should still participate to a very great extent in the general expansion of the building industry.

The construction industry, moreover, creates a demand for the products of plywood and veneer mills, sash and door mills, and hardwood flooring mills. The output of the plywood industry in Ontario is at the present time relatively small, but it is rapidly increasing. Although the output of sash and door mills in Ontario has been rising in recent years, the increase has not been considerable. This is a reflection perhaps of the growing use of metal—especially aluminum—sashes and doors. The production of hardwood flooring has been down slightly but the decline is hardly serious.

Another important demand for wood is that created by the furniture industry. This industry in Ontario has enjoyed a gradual but persistent increase in output, in response to the continued increase in residential construction. Although it is true that metals, fabrics and plastics have made inroads into furniture manufacturing—especially kitchen furniture—it is, nevertheless, anticipated that the demand for lumber from furniture manufacturers will increase absolutely, at least.

Far more important than the lumber and wood-using industries, from the viewpoint of value of output, is the pulp and paper industry. In 1954, the pulp and paper industry in Ontario ranked third among the Province's industries as regards total value of production. The industry, moreover, is not only one of the 3 most important manufacturing

industries in the Province, but, as indicated above, it is the principal consumer of the Province's Crown timber.

The pulp and paper industry is primarily an export industry. Our best customer is the United States, and the most important product of the pulp and paper industry exported to the United States is newsprint. Although the United States is the main market for our newsprint, it is not the only one; since 1950, our overseas exports have shown a steady rise to pre-war levels. Pulp, too, is an important export commodity — again, with most of it going to the United States. While our exports of paper other than newsprint are significant from the promise of expansion they hold, they are not of relatively great dollar importance. Both newsprint and pulp have been allowed duty free into the United States market since 1914, when the tariffs on these items were removed.

The principal pulping processes are the mechanical, sulphite and sulphate. Most of the pulp made by the two former goes into newsprint, so that as the production of newsprint has increased, so too has the output of mechanical and sulphite pulps. A development of major significance in pulping, however, has been the growing absolute and relative importance of sulphate, or kraft pulp. In the United States, the swing to sulphate has been phenomenal, especially since 1945. Much of this expansion in the sulphate sector of the industry may be attributed to the greatly increased output of the packaging and wrapping papers made from sulphate pulp. The Ontario industry, too, has participated to no small degree in this expansion of sulphate manufacturing.

As far as paper manufacturing in Ontario is concerned, newsprint still remains by far the most important type of paper, from the point of view of both value and volume of

production, produced in the Province. In 1954, for example, it accounted for about 62 per cent, by value, of the Province's total paper output. Newsprint, moreover, has been the only Canadian paper product free to enter the United States market without the hindrance of tariff barriers. In any event, Canada became the major supplier of newsprint to the United States. Trends in newsprint consumption south of the border, are, therefore, of vital importance to Ontario producers. During 1955, the consumption of newsprint in the United States rose considerably and, at the present time, it is anticipated that the trend of newsprint consumption in the United States will continue in a decidedly upward direction.

Spruce is the main species from which newsprint is made, and it was the shortage of this species, which, over forty years ago, impelled the U.S. Congress to remove the tariff on Canadian newsprint. Producers in the United States, however, have been active in developing pulping processes which make use of species other than spruce — especially the lower grade hardwoods which abound in the northeastern United States — to produce newsprint. Such, for example, is the semi-chemical pulping process and the more recently developed chemi-groundwood process. Then, too, production of newsprint has been adapted to the use of southern pine. It is most unlikely, however, that either of these developments will seriously threaten the Ontario newsprint industry; productive capacity in the United States still falls considerably short of satisfying the demand for newsprint in that country. Canada, including, of course, Ontario, will doubtless remain the major supplier of newsprint to the United States. Moreover, Ontario has more than ample reserves of those lower grade hardwood

species which the newer pulping processes can use.

Although newsprint has occupied the key position as far as paper manufacture is concerned, other types of paper—especially paper boards—have displayed some tendency to form an increasing proportion of the Province's total paper output. For obvious reasons, this broadening of the base of production in the Ontario paper industry is a most welcome development.

Any appraisal of the importance of mining and forestry to the Ontario economy must take much more into account than the relatively small number of workers directly employed by them. Throughout this and the two previous sections, the great importance of agriculture and our "extractive-dependent" industries has been emphasized. While these industries do use raw materials drawn from outside the Province, most of their production consumes the products of Ontario farms, mines and forests. Certainly, if most of their raw materials had to come from greater distances, their competitive efficiency would be impaired and perhaps their continued location here put in question. There seems no doubt, however, that a rising volume and value of mineral and forest products will be marketed by Ontario producers in the next decade or so. It is most important to the growth of many industries in the Province that this should be so.

## MANUFACTURING

Despite rapid industrial growth in other parts of Canada, Ontario for over half a century has accounted for half the value of Canada's total manufacturing output. To explain this remarkable concentration of manufacturing in this one province has been the purpose of the first two chapters. Clearly,

**NET VALUE OF PRODUCTION BY CLASSES OF INDUSTRIES,  
ONTARIO AND CANADA, SELECTED YEARS 1925-1953**

CLASS OF INDUSTRY	ONTARIO (Millions of Dollars)				CANADA			
	1925 <sup>(1)</sup>	1939	1946	1953 <sup>(2)</sup>	1925 <sup>(1)</sup>	1939	1946	1953 <sup>(2)</sup>
MANUFACTURING	566	791	1,659	4,130	1,036	1,531	3,467	7,993
AGRICULTURE	363	190	405	536	1,343	711	1,468	2,241
MINING	88	137	107	185	227	298	322	791
FORESTRY	93	21	54	103	313	95	250	506
OTHER	150	125	250	1,028	406	362	727	3,007
TOTAL	1,260	1,264	2,475	5,982	3,325	2,997	6,234	14,538

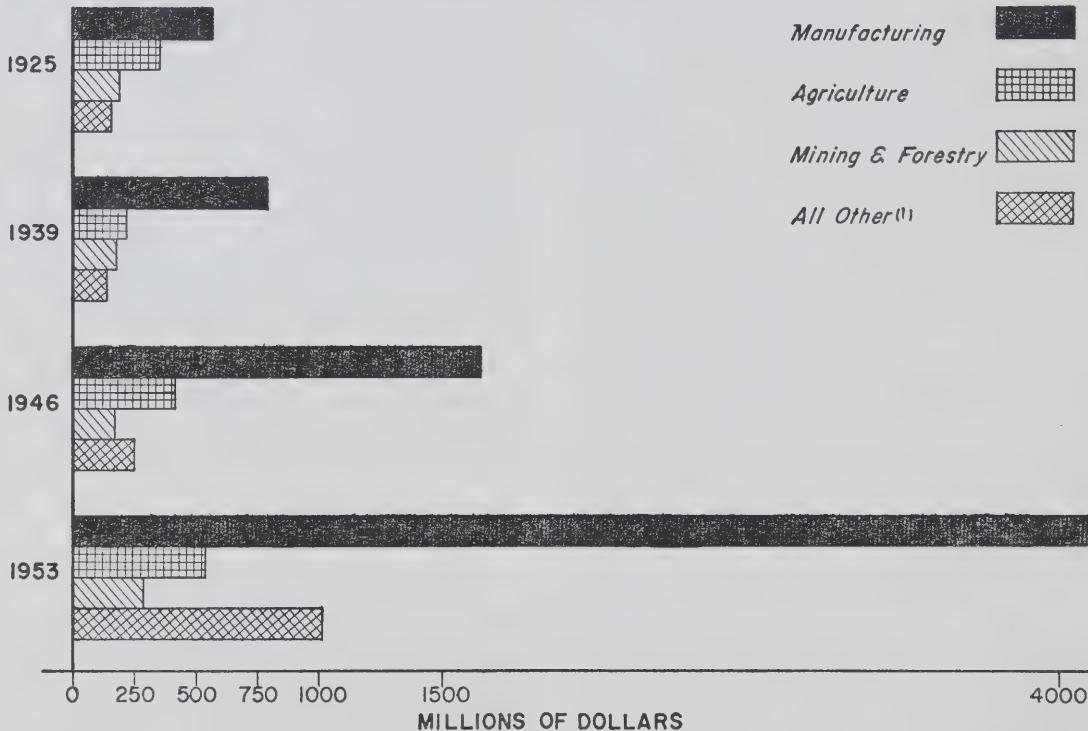
(PERCENTAGE DISTRIBUTION BY CLASSES OF INDUSTRIES)

MANUFACTURING	44.8	62.6	67.0	69.0	31.2	51.1	55.6	55.0
AGRICULTURE	28.8	15.1	16.4	9.0	40.4	23.7	23.5	15.4
MINING	7.0	10.8	4.3	3.1	6.8	9.9	5.2	5.4
FORESTRY	7.5	1.7	2.2	1.7	9.4	3.2	4.0	3.5
OTHER	11.9	9.8	10.1	17.2	12.2	12.1	11.7	20.7
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

(1) Series for later years have been revised, but there is qualified comparability with the 1925 Data  
after adjustments to the schedule for that year (2) Preliminary.

**NET VALUE OF PRODUCTION FOR ONTARIO IN MANUFACTURING,  
AGRICULTURE MINING & FORESTRY AND OTHER INDUSTRIES.**

SELECTED YEARS 1925-1953



(1) Other industries include some primary fishing and trapping, but comprise mainly construction and power while service industries are excluded.

**Table 3—**  
**Ontario's Contribution to Canadian**  
**Manufacturing Production, Selected Years**  
**1900-1953**

Year	Net Value of Manufacturing Production in Canada (\$000's)	Net Value of Manufacturing Production in Ontario (\$000's)	Ontario as % of Canada
1900	214,526	103,303	48.2
1925	1,037,000	564,789	54.5
1939	1,531,052	791,429	51.7
1953	7,993,069	4,130,126	51.7

Data for the year 1900 are estimated from census and other information dealing with the period. The remaining data are drawn from Dominion Bureau of Statistics sources. 1953 statistics include data for Newfoundland.

one of the most important reasons is the great natural wealth of the Province. But this is by no means the whole explanation, for several of the other provinces are well supplied in this respect. Nor is it self-evident, as seems sometimes to be assumed, that national policy has brought manufacturing to Ontario. National policy has in many ways favoured manufacturing, as it has agriculture, mining and forestry, but the protection given by the tariff, for instance, applies anywhere in Canada. National policy cannot be offered as an explanation of the concentration of industry in one province rather than in another.

For the explanation, one must turn to physical factors and the way they have been used by the people of Ontario in the past. These have been set out earlier in this Submission. To that analysis, the nature of the leading industries of the Province today lends impressive support. They are industries—such as motor vehicles, automotive parts, primary iron and steel, aircraft and parts, heavy electrical machinery, electrical apparatus and supplies, rubber goods, industrial machinery, sheet metal products and radio and television equipment—which manufacture for the whole Canadian market and, in part, for export. They must, therefore, locate in that

**Table 4—**  
**The Forty Leading Manufacturing Industries**  
**in Canada, Ranked Nationally by Net Value**  
**of Production in 1953,<sup>1</sup> with Ontario's**  
**Contribution to Totals**

Industry	Totals of Canadian Net Value (Millions of Dollars)	Ontario's Contribution	Ontario's Contribution as % of Totals
1. Pulp and paper	600	177	29.5
2. Non-ferrous metal smelting and refining	310	162	52.3
3. Motor vehicles	274	269	98.2
4. Sawmills	269	37	1.4
5. Aircraft and parts	261	160	61.3
6. Primary iron and steel	217	167	77.0
7. Printing and publishing	175	84	48.0
8. Rubber goods, including footwear	173	141	81.5
9. Petroleum products	160	44	27.5
10. Heavy electrical machinery	155	147	94.8
11. Railway rolling stock	154	39	25.3
12. Slaghutering and meat packing	152	61	40.1
13. Breweries	147	62	42.2
14. Industrial machinery	145	82	56.6
15. Miscellaneous electrical apparatus and supplies	142	72	50.7
16. Motor vehicle parts	141	135	95.7
17. Bread and other bakery products	140	60	42.9
18. Men's factory clothing	126	39	31.0
19. Furniture	121	63	52.1
20. Shipbuilding	116	18	15.5
21. Printing and bookbinding	113	65	57.5
22. Sheet metal products	104	64	61.5
23. Women's factory clothing	104	25	24.0
24. Butter and cheese	96	37	38.5
25. Bridge building and structural steel	91	35	38.5
26. Radios, television sets and parts	87	63	72.4
27. Iron castings	85	59	69.4
28. Fruit and vegetable preparations	82	56	68.3
29. Paper boxes and bags	82	43	52.4
30. Miscellaneous food preparations	81	34	42.0
31. Miscellaneous chemical products	80	45	56.3
32. Agricultural implements	79	71	90.0
33. Synthetic textiles and silk	79	32	40.5
34. Sash, door and planing mills	77	22	28.6
35. Cotton yarn and cloth	73	25	34.2
36. Tobacco, cigars and cigarettes	68	5	7.4
37. Miscellaneous paper goods	64	43	67.2
38. Brass and copper products	60	34	56.7
39. Flour mills	40	17	42.5
40. Prepared stock and poultry feeds	30	14	46.7
Total of the Forty Leading Industries	5,550	2,808	50.6

Note: Because of rounding, the figures do not total exactly.  
 (1) Preliminary estimates.

part of the country where transportation facilities are most suitable for the assembling of raw materials and parts and for the marketing of the final product, where power, land for industrial sites and water for industrial use are cheap and plentiful and where the cost of food is low by reason of the fertile land and friendly climate, suitable to an efficient type of mixed farming, from which alone can come a dependable flow of all the varied products demanded by a modern urban society. All these are available in southern Ontario to a degree not found on a comparable scale elsewhere in Canada.

That the motor car industry has developed so vigorously in Ontario is particularly significant in this connection. The industry grew in both Michigan and Ontario out of the carriage industry, which was itself, in turn, based upon both regions' splendid hardwood forests. The successful use of the internal combustion engine in ships stimulated the inventions and improvements which made its use for land transportation possible. Though neither of these factors is important today, the industry has remained in Ontario. It has not found other areas equally attractive as centres from which to serve the domestic and export markets.

This is so of many other industries. It is true of agricultural implements, of which 90 per cent of the national supply is made in Ontario; of heavy electrical machinery, for 95 per cent of which this Province accounts; and of rubber goods, primary iron and steel, radio and television equipment, aircraft, chemical products, iron castings, sheet metal products and industrial machinery, in all of which Ontario produces the largest proportion of Canada's output. They have located and expanded in Ontario because the net sum of advantages is greater here than in other parts of Canada. The production of

**Table 5—**  
**Leading Canadian Manufacturing Industries**  
**in Which More Than One-third of Total**  
**Net Value of Production was Contributed by**  
**Ontario Firms in 1953<sup>1</sup>**

Industry	Totals of Canadian Net Value (Millions of Dollars)	Ontario's Contribu- tion	Ontario Contri- bution as % of Total
<b>A Industries with over 75 per cent of total Canadian production occurring in Ontario.</b>			
Motor vehicles	274	269	98.2
Motor vehicle parts	141	135	95.7
Heavy electrical machinery	155	147	94.8
Agricultural implements	79	71	90.0
Rubber goods, including footwear	173	141	81.5
Primary iron and steel	217	167	77.0
<b>B Industries with between 50 and 74 per cent of total Canadian production occurring in Ontario.</b>			
Radios, television sets and parts	87	63	72.4
Iron castings	85	59	69.4
Fruit and vegetable preparations	82	56	68.3
Miscellaneous paper goods	64	43	67.2
Sheet metal products	104	64	61.5
Aircraft and parts	261	160	61.3
Printing and bookbinding	113	65	57.5
Brass and copper products	60	34	56.7
Industrial machinery	145	82	56.6
Miscellaneous chemical products	80	45	56.3
Paper boxes and bags	82	43	52.4
Non-ferrous metal smelting and refining	310	162	52.3
Furniture	121	63	52.1
Miscellaneous electrical apparatus and supplies	142	72	50.7
<b>C Industries with between 33 1/3 and 49 per cent of total Canadian production occurring in Ontario.</b>			
Printing and publishing	175	84	48.0
Prepared stock and poultry feeds	30	14	46.7
Flour mills	40	17	42.5
Bread and other bakery products	140	60	42.9
Breweries	147	62	42.2
Miscellaneous food preparations	81	34	42.0
Synthetic textiles and silk	79	32	40.5
Slaughtering and meat packing	152	61	40.1
Butter and cheese	96	37	38.5
Bridge building and structural steel	91	35	38.5
Cotton yarn and cloth	73	25	34.2

(1) Preliminary estimates.

half of Canada's manufacturing output in Ontario, decade after decade, testifies eloquently to the fact that these advantages continue undiminished.

As in the case of other provinces, many of Ontario's manufactures are dependent upon the output of the primary industries of agriculture, mining and forestry, though our dependence is not so great. There is a great deal included within the statistical category,

manufacturing, that is obviously and directly the sort of working up of materials produced by the primary or extractive industries which a country mainly dependent upon the non-manufacturing industries should undertake. They are the simple sorts of manufacturing which, like the pulp and paper industry, greatly reduce the bulk and weight of raw materials as well as begin the process of transforming them into consumer goods (e.g.,

**Table 6—The Forty Leading Manufacturing Industries in Canada, Ranked Nationally by Net Value of Production in 1953<sup>1</sup>, With Provincial Distribution of Totals of Net Value**

	Ont.	Que.	B.C.	Man.	Sask.	Alta.	N.B.	N.S.	P.E.I.*	Nfld.	Canada
(Millions of Dollars)											
1. Pulp and paper	177	252	81	8	—	—	36	11	35	600	
2. Non-ferrous metal smelting and refining	162	123	—	—	—	—	—	—	—	310	
3. Motor vehicles	269	—	—	—	—	—	—	—	—	274	
4. Sawmills	37	36	156	—	3	13	11	8	2	269	
5. Aircraft and parts	160	91	—	—	—	—	—	—	—	261	
6. Primary iron and steel	167	26	—	7	—	—	—	14	—	217	
7. Printing and publishing	84	40	17	11	6	8	3	4	1	175	
8. Rubber goods and shoes	141	31	—	—	—	—	—	—	—	173	
9. Petroleum products	44	63	5	5	15	26	—	—	—	160	
10. Heavy electrical machinery	147	—	—	—	—	—	—	—	—	155	
11. Railway rolling stock	39	74	—	21	—	8	—	6	—	154	
12. Slaughtering and meat packing	61	30	9	21	8	19	2	—	—	152	
13. Breweries	62	39	11	8	8	10	—	—	3	147	
14. Industrial machinery	82	48	9	—	—	—	—	—	—	145	
15. Misc. electrical apparatus and supplies	72	68	—	—	—	—	—	—	—	142	
16. Motor vehicle parts	135	—	—	—	—	—	—	—	—	141	
17. Bread and other bakery products	60	39	12	7	5	9	3	3	1	140	
18. Men's factory clothing	39	71	—	9	—	3	—	**	—	126	
19. Furniture	63	39	8	7	—	—	—	—	—	122	
20. Shipbuilding	18	55	22	—	—	—	6	14	—	116	
21. Printing and bookbinding	65	30	—	6	—	—	—	—	—	113	
22. Sheet metal products	64	26	5	5	1	—	—	—	—	104	
23. Women's factory clothing	25	71	—	5	—	—	—	—	—	104	
24. Butter and cheese	37	23	8	7	7	8	2	3	—	96	
25. Bridges and structural steel	35	29	15	8	—	3	—	—	—	91	
26. Radios, television sets and parts	63	22	—	—	—	—	—	—	—	87	
27. Iron castings	59	—	—	—	—	—	—	—	—	85	
28. Fruit and vegetable products	56	—	11	—	—	—	—	2	—	83	
29. Paper boxes and bags	43	28	5	3	—	—	—	—	—	82	
30. Misc. food products	34	27	7	6	—	2	3	1	—	81	
31. Misc. chemical products	45	30	—	—	—	—	—	—	—	80	
32. Agricultural implements	71	—	—	5	—	—	—	—	—	79	
33. Synthetic textiles and silk	32	45	—	—	—	—	—	—	—	79	
34. Sash, door and planing mills	22	19	16	2	—	8	3	3	1	77	
35. Cotton yarn and cloth	25	44	—	—	—	—	—	—	—	73	
36. Tobacco, cigars and cigarettes	5	63	—	—	—	—	—	—	—	68	
37. Misc. paper goods	43	16	—	—	—	—	—	—	—	64	
38. Brass and copper products	34	20	—	—	—	—	—	—	—	60	
39. Flour mills	17	—	—	3	8	4	—	—	—	40	
40. Prepared stock and poultry feeds	14	8	4	1	—	2	**	**	—	30	
Total provincial shares	2,808	1,626	401	155	61	123	69	69	43	5,550 <sup>2</sup>	
Provincial shares as % of national totals <sup>2</sup>	50.6	29.3	7.2	2.8	1.1	2.2	1.2	1.2	0.8	—	

Note: A dash indicates that the data are not available.

\*All contributions less than \$1 million in 1953.

\*\* Indicates a net value of production of less than \$1 million in 1953.

(1) Preliminary.

(2) Column does not add due to rounding, nor can provincial shares be totalled across, in view of incomplete returns.

in this instance, the newspaper). The term manufacturing even includes, as the fourth in importance amongst Canada's list of manufacturing industries, the smelting and refining of our non-ferrous metals.

With the available statistics, it is unfortunately not possible to separate from manufacturing those branches which might be called "extractive-dependent" industries, as they fall in the class described above. They may be contrasted with the rest of the class of manufacturing, or the more complex industries thought of by the average person when the word, manufacturing, is mentioned. By contrast with the extractive-dependent industries, these "advanced" industries commonly assemble a wide variety of raw materials from many different places and sell the final products of their operations to a great number of people, both consumers and producers. The simple extractive-dependent industries usually work up one raw product

and sell it to a relatively small number of buyers for further processing.

How closely the main manufactures of the provinces of Canada other than Ontario and Quebec are related to their basic agricultural or raw material producing occupations is strikingly shown in Table 6. All leading branches of manufacturing in Canada in 1953 are there listed. The prominence of the extractive-dependent industries is very obvious. These are the branches of manufacturing with which most of the provinces are concerned. Yet, with the exception of the forestry industries in British Columbia particularly sawmills, the value added by manufacturing in even the extractive industries in the provinces other than Ontario and Quebec is small indeed. Even in the pulp and paper industry which is present in so many provinces, Ontario stands second only to Quebec.

The importance in Ontario of the raw material and food-producing industries is therefore quite apparent. Nevertheless, the

**Table 7—Net Value of Production, 1946-1953, in Those Ontario Manufacturing Industries Having a Net Value of Production in Excess of \$50 Million in 1953**

	1946	1947	1948	1949	1950	1951	1952	1953
(Millions of Dollars)								
Motor vehicles and parts <sup>1</sup>	101	171	207	257	380	378	383	404
Electrical apparatus and supplies <sup>1</sup>	95	146	182	194	231	255	289	340
Pulp and paper	78	115	135	132	158	214	175	177
Non-ferrous metal smelting and refining	29	58	77	95	114	161	151	162
Primary iron and steel	52	67	93	98	116	157	175	167
Aircraft and parts <sup>2</sup>	4	6	10	14	16	45	75	160
Rubber goods including footwear	76	92	87	83	112	132	133	141
Printing and publishing	39	43	50	54	61	66	73	84
Industrial machinery <sup>3</sup>	57	82	89	59	60	69	76	82
Agricultural implements	27	36	60	75	63	67	87	71
Printing and bookbinding	26	32	39	43	48	54	59	65
Sheet metal products	32	36	41	42	46	52	57	64
Furniture	22	33	41	46	48	52	54	63
Hardware, tools and cutlery	32	35	40	36	43	54	59	63
Breweries	28	32	28	41	43	45	51	62
Slaughtering and meatpacking	16	28	30	42	43	50	66	61
Bread and other bakery products	34	37	40	43	44	51	55	60
Iron castings	34	43	45	51	55	60	61	59
Fruit and vegetable preparations	34	41	43	38	43	59	60	56

(1) Industries combined to emphasize factors of major significance in the economy.

(2) Figures prior to 1950 are not strictly comparable because some production in other areas cannot be wholly excluded from Ontario data.

(3) Data prior to 1949 are not strictly comparable with those for later years.

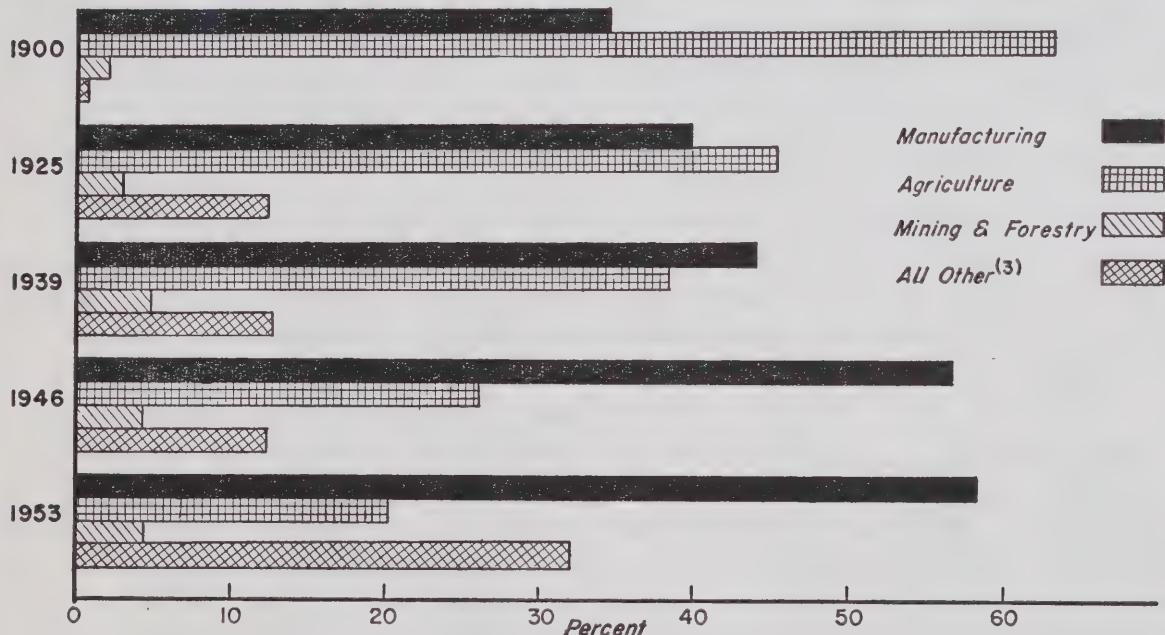
**PERSONS EMPLOYED<sup>(1)</sup> IN ONTARIO AND CANADA BY CLASSES OF INDUSTRIES,<sup>(2)</sup>  
SELECTED YEARS 1900 - 1953**

CLASS OF INDUSTRY	ONTARIO					CANADA				
	1900	1925	1939	1946	1953	1900	1925	1939	1946	1953
MANUFACTURING	167	263	319	498	635	344	523	658	1,058	1,327
AGRICULTURE	306	299	277	230	220	717	1,082	1,088	955	860
MINING	4	12	22	23	29	28	53	71	69	67
FORESTRY	6	8	13	16	20	16	41	77	88	104
OTHER <sup>(3)</sup>	3	81	92	110	185	3	286	281	312	552
TOTAL	486	663	723	877	1,089	1,108	1,985	2,175	2,482	2,910

( PERCENTAGE DISTRIBUTION BY CLASSES OF INDUSTRIES )

MANUFACTURING	34.4	39.7	44.1	56.8	58.3	31.1	26.3	30.3	42.6	45.6
AGRICULTURE	63.0	45.1	38.3	26.3	20.2	64.7	54.5	50.0	38.5	29.5
MINING	0.8	1.8	3.1	2.6	2.7	2.5	2.7	3.3	2.8	2.3
FORESTRY	1.2	1.2	1.8	1.8	1.8	1.4	2.1	3.5	3.5	3.6
OTHER <sup>(3)</sup>	0.6	12.2	12.7	12.5	17.0	0.3	14.4	12.9	12.6	19.0
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

**PERCENTAGE DISTRIBUTION OF  
PERSONS EMPLOYED<sup>(1)</sup> IN ONTARIO BY CLASSES<sup>(2)</sup> OF INDUSTRIES,<sup>(3)</sup>  
SELECTED YEARS 1900 - 1953**



(1) As reported by employers, or estimated from surveys and census material, these data are not to be read as labour force distribution as a whole, but only as employment distribution.

(2) Regardless of occupational classification.

(3) Other industries include some primary fishing and trapping, but comprise mainly construction and power while service industries are excluded.

great bulk of the more advanced "finished product" industries are concentrated in this Province and, in all likelihood, will continue to be concentrated here. As, on a rough estimate, about one-fifth of the value added in all manufacturing in Ontario and nearly twice that proportion in the rest of Canada fall in the class of extractive-dependent production, Ontario clearly has a very important stake in these industries and in the primary industries upon which they are based; but far more of the "advanced-finished product" industries are located in this Province. Thus, the methods by which we can achieve even greater development in these more complex stages of manufacturing is of interest and concern to all Canadians, for it is in large part upon such progress that our rising living standards depend.

### **INCOME AND LIVING STANDARDS**

As measured by personal expenditure on consumer goods and services, the standard of living of Ontario residents may be estimated to have gone up 35 per cent since 1942 and nearly 53 per cent since 1939. These figures exclude both the rise in consumer prices and the increase in population; in other words, they are per capita figures adjusted for price change. They mean that, in terms of the goods and services he buys, the Ontario consumer is half again as well off as he was in 1939.

Ontario's higher real income is not, of course, limited to the things the consumer buys for himself. Improved public services contribute to higher real incomes too, although they do not appear in the figure for consumers' expenditures. Better educational facilities, better streets and highways, public buildings of all kinds, waterworks, improved sanitation and measures to improve health

and care for the sick are examples of the many public services which enable the people to lead healthier, more comfortable lives.

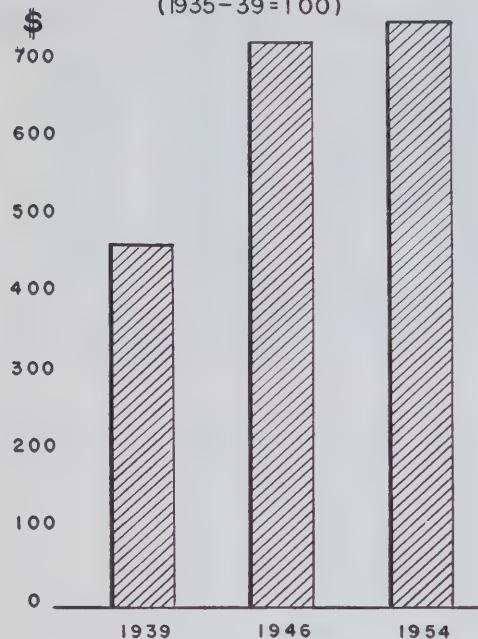
A substantial rise in personal income per capita, resulting from the high productivity of labour and the full employment which the war and post-war years have seen, is the basis of the increase in living standards. A large element in personal income is wage and salary earnings. In Ontario, the average weekly wage or salary per employed person in manufacturing, expressed in 1949 dollars, rose from \$37.55 in 1939 to an estimated \$58.00 in 1955, an increase of 57 per cent, after price changes are allowed for. During the same period, the average length of the work week declined from 47 hours in 1939 to 41 hours in 1955—a reduction of 13 per cent. In terms of both increased pay and increased leisure, Ontario citizens have made considerable progress.

The increase in real income has meant that we are able to enjoy a higher standard of well-being than heretofore. This has taken many forms. Milk, meat (and better cuts of meat), fresh fruits and vegetables now find greater representation in family diets than ever before. There has been a tremendous increase in material acquisitions. For instance, since 1941, the number of passenger automobiles registered in Ontario has more than doubled, having risen from 637,000 to an estimated 1,288,000 in 1955. There is now one passenger car in Ontario for every four people, while in 1941 there was only one for every six people. At the 1951 census, it was found that 54.2 per cent of all the households in Ontario contained at least one car-owner.

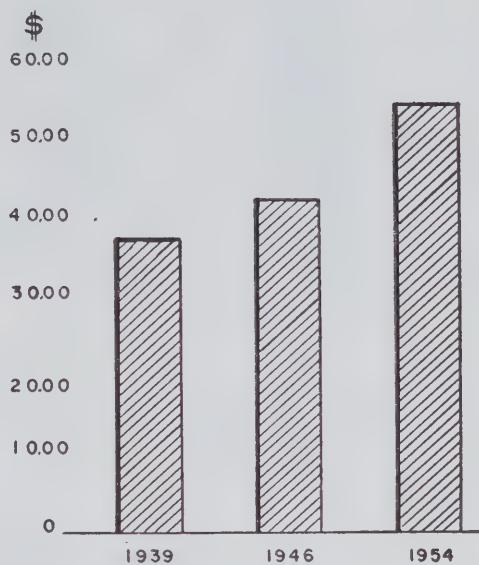
The increase in living standards may also be judged by the additional numbers of household conveniences which Ontario people enjoy. Between the censuses of 1941 and 1951, the number of Ontario homes

### Increase in Income and Living Standards, Ontario, 1939, 1946 and 1954

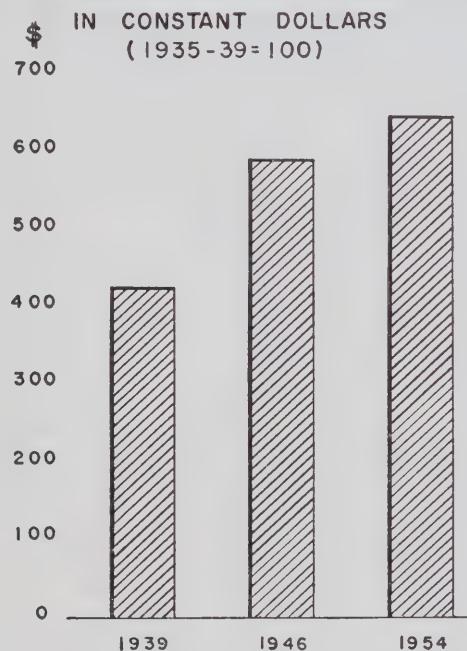
PERSONAL INCOME PER CAPITA, ONTARIO,  
IN CONSTANT DOLLARS  
(1935-39=100)



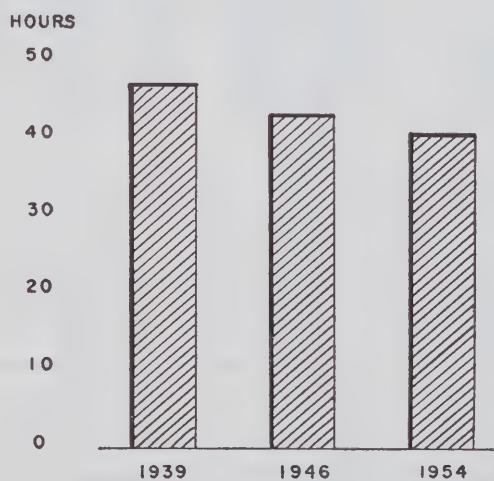
AVERAGE WEEKLY WAGE OR SALARY IN  
MANUFACTURING INDUSTRIES, ONTARIO,  
IN CONSTANT DOLLARS  
(1949=100)



ESTIMATED PER CAPITA EXPENDITURES  
ON CONSUMER GOODS AND SERVICES, ONTARIO



AVERAGE HOURLY WORK WEEK  
IN MANUFACTURING INDUSTRIES, ONTARIO



heated by a furnace increased by more than half; those with an inside piped water supply increased by 40 per cent. Over 50 per cent more Ontario homes had electric light and electricity or gas for cooking in 1951 than in 1941. The number of telephones in use in that decade increased by 82 per cent. Radios in domestic use increased by 44 per cent. The number of dwellings with flush toilets increased by more than 50 per cent. Mechanical refrigeration showed the greatest increase of all—between 1941 and 1951, the number of mechanical refrigerators in use rose from 287,000 to 729,000, or by 154 per cent.

**Table 8—  
Increase in Ontario's Living Conveniences,  
1941-1951**

	Number		Percentage Change		Percentage of Total Households	
	1941 (000's)	1951	1951/1941	1941	1951	
Furnace heat	491	743	51.3	53.8	64.0	
Inside water supply	690	971	40.7	75.7	89.2	
Electric light	738	1,110	50.4	81.0	94.0	
Gas or electric cooking	543	880	62.1	59.6	74.5	
Private or shared bath	553	860	55.5	60.8	72.8	
Flush toilets	589	903	53.3	64.6	76.4	
Refrigeration (mechanical)	287	729	154.0	31.5	61.7	
Ice	255	236	-7.5	28.0	20.0	
Radio	759	1,098	44.7	83.6	93.0	
Telephone	476	866	81.9	52.3	73.3	
Electric vacuum cleaner	314	648	106.4	34.6	54.9	
Automobile	450	640	42.2	49.5	54.2	

The rise in living standards has affected nearly all sectors of the economy, farmers included, particularly in the decade to 1951. In that year, 89 per cent more farm dwellings had electric light than 10 years earlier. The number with inside running water increased by 170 per cent and the number using mechanical refrigeration, by 324 per cent. These and other benefits are shown in the following table:

**Table 9—  
Ontario's Farm Amenities, 1941 and 1951**

	1941	1951	Percentage Increase 1951/1941
	No.	No.	%
Total occupied dwellings	180,064	166,955	-7
Electric lighting <sup>1</sup>	67,164	127,225	89
Furnace heating	33,312	48,260	45
Inside running water	25,209	68,170	170
Private bath or shower	19,267	42,055	118
Flush toilet—private	17,105	41,935	145
Mechanical refrigeration	16,746	71,015	324
Radio	118,474	147,655	25
Telephone	91,093	113,940	25
Electric vacuum cleaner	19,865	58,815	196

(1) Includes privately generated supplies.

## HOUSING

Housing construction has been at an unprecedented level of activity during the last 11 years. More than 330,000 new dwelling units were built in Ontario from 1945 to 1955, inclusive. In addition, over 17,000 units were obtained by the conversion of old houses, making a total of nearly 350,000 dwelling units which were made available to the Ontario people. The construction program has gained even greater momentum during the last few years and in 1955, there were more dwellings constructed in Ontario than in any previous year. The final count for the year will show the completion of about 52,000 new dwelling units, in addition to some 2,000 conversions.

The Metropolitan Toronto area accounts for a large part of the total housing construction in the Province. From 1948 to 1955, inclusive, one-quarter of the new housing units built in the Province were erected in this area. Home building has spurted since the establishment of the Metropolitan Toronto government. In 1954, the number of new dwellings reached more than 16,000, 40 per cent of the Ontario total and during 1955, the Toronto area accounted for around 45 per cent of the Province's total construction.

**Table 10—New Residential Construction in Ontario, 1945-1955<sup>1</sup>**

Year	Starts	Completions			Carry-Over
		New Units	Conversions	Total	
1945	n.a.	13,100	2,000	15,100	n.a.
1946	n.a.	19,600	1,700	21,300	19,706
1947	n.a.	22,500	2,200	24,700	17,943
1948	29,976	26,391	2,273	28,664	21,112
1949	34,023	31,440	1,264	32,704	23,585
1950	33,430	31,318	1,178	32,496	24,331
1951	27,349	31,732	973	32,705	19,258
1952	30,016	27,461	985	28,446	20,513
1953	38,873	35,173	1,331	36,504	24,134
1954	46,382	41,085	1,644	42,729	27,941
1955 (Est)	54,000	52,000	2,000	54,000	30,000
<b>Total, 1945 to 1955, inclusive</b>				<b>349,348</b>	

(1) Figures for the years 1945-1947 are estimated, while those for the period 1948-1954 have been obtained from the monthly publication of the Dominion Bureau of Statistics entitled, "New Residential Construction"; 1955 figures are estimated.

Although no attempt has been made to draw up detailed estimates of future housing needs and of the resulting volume of construction, it is safe to say that, with an ever-expanding population, the level of housing construction should, over the long-run, show a continuation of the rising trend established in the post-war period. However, when the

present backlog of housing construction is overtaken, the relatively smaller number of people reaching the marriageable age group during the next few years may slow down the demand until the early 1960's, when the large number of births beginning with the war years will be translated into a high rate of family formation.

**Table 11—New Capital Investment, Ontario and Canada, 1940-1955<sup>1</sup>**

Year	Canada (\$ million)	Ontario (\$ million)	Ontario as % of Canada	Canada's Gross National Product (\$ million)	Capital Investment in Canada as % of G.N.P.
1940	1,048			6,872	15.3
1941	1,463			8,517	17.2
1942	1,542	2,739 <sup>2</sup>	40.0	10,539	14.6
1943	1,485			11,183	13.3
1944	1,309			11,954	11.0
1945	1,284			11,850	10.8
1946	1,703	2,048 <sup>2</sup>	37.4	12,026	14.2
1947	2,489			13,768	18.1
1948	3,175	1,183	37.3	15,613	20.3
1949	3,502	1,297	37.0	16,462	21.3
1950	3,815	1,419	37.2	18,203	21.0
1951	4,577	1,740	38.0	21,474	21.3
1952	5,285	1,899	35.9	23,255	22.7
1953	5,841	2,106	36.1	24,449	23.9
1954	5,507	2,066	37.5	24,041	22.9
1955	5,954	2,242 <sup>2</sup>	37.7	26,000 <sup>2</sup>	22.9
	<b>49,979</b>	<b>18,739</b>	<b>37.5</b>		

(1) Capital investment data for Canada and Ontario have been taken from publications of the Department of Trade and Commerce, Ottawa, for the years 1940-1949, Private and Public Investment in Canada, 1926-1951, pp. 151 and 201, and for the years 1950-1955, Private and Public Investment in Canada, Outlook 1954 and 1955 (Canada and Regional Estimates) and Outlook 1955, Mid-Year Review.

(2) Estimated.

## **CAPITAL INVESTMENT**

Underlying Ontario's economic expansion has been a capital investment which saw, in the period 1940-1955, nearly \$19 billion invested in developing our natural resources, expanding and equipping our factories, building homes, schools, hospitals, highways, waterworks, sewers and other facilities. We have in recent years consistently invested in such projects 22-23 per cent of our total provincial product. For the first time, capital investment in 1953 exceeded \$2 billion and it continued above this figure both in 1954 and 1955. Very large amounts have been invested in manufacturing industries, utilities (especially the Ontario Hydro), residential housing and public works and buildings. In the last 8 years, the annual average increase in Ontario's physical plant, equipment and other assets — that is, in physical volume after allowance for price changes—exceeded 6 per cent. (See Table 11)

## **CONCLUSION**

This part of our Submission has been devoted to an outline of the principal factors in Ontario's social and economic development. We have reviewed the spectacular growth in population and the expansion in both primary and secondary industry. We

have shown the rise in living standards, testifying to the fruits that can be harvested by an enterprising and fully employed economy with a high rate of capital investment. We have been heartened by the fact that the people in other countries look upon Canada, and Ontario, as a land of opportunity and stable government, and are prepared to risk their savings in helping in the development of our resources. There is, of course, always a danger that foreign control may result in the dictation of company policies which would be unfair to Canadian producers and this aspect has to be given consideration. It should be borne in mind, however, that Ontario's development could not have been achieved without an inflow of capital and that, in addition, Canadians themselves have become increasingly conscious not only of their own investment opportunities but of those abroad. Indeed, for most of the past 20 years, we have been a net exporter of capital. That is a sign of our growing maturity.

While the picture of a pulsating Ontario presented here is an impressive one and bright with promise for the future, great problems and responsibilities lie ahead. The sheer fact of growth itself has given rise to a host of problems, some of which will be considered in the next part of this Submission.

## ***Part II***

This part deals with the effects of Ontario's expanding economy upon provincial and municipal services and the problems thereby created.



## Chapter 4

### THE NEED FOR PROVINCIAL AND MUNICIPAL SERVICES AND REVENUES

The rapid growth in Ontario's population and industry, particularly in the last decade and a half, could not have occurred without profoundly affecting the levels of provincial and municipal services. Population does not grow, nor does industry operate and expand, in a vacuum. To meet the demands made upon them for new and expanded services, both the Province and the municipalities have been obliged to step up their expenditures as never before. In the first part of our Submission, we examined some of the reasons why Ontario has consistently accounted for half of Canada's aggregate manufacturing output and has been the source of half of the Federal Government's direct and nearly two-fifths of its indirect tax collections. Great natural resources, an abundance of hydro-electric power, good highways, rail and water transportation, a central location on the continent, a growing population, a suitable climate and ample water for industrial and domestic use — all these have facilitated Ontario's development. But no less important has been the framework of provincial and municipal services without which this growth would not have been possible.

Traditionally, the expenditures of the Federal Government have increased in periods of war, while provincial and municipal expenditures have increased in times of peace. This situation has followed naturally

from the division of responsibilities provided under the B.N.A. Act, which on the whole has served us well.

**Table 12—Federal Government's Direct Tax Collections in Ontario and the Rest of Canada, Fiscal Years 1954 and 1955**

	1954		1955	
	(\$ million)	%	(\$ million)	%
<b>Individual Income Tax</b>				
Ontario.....	623	48.8	633	49.3
Rest of Canada .....	655	51.2	651	50.7
Total.....	<u>1,278</u>	<u>100.0</u>	<u>1,284</u>	<u>100.0</u>
<b>Corporation Income Tax</b>				
Ontario.....	622	50.3	512	48.3
Rest of Canada .....	616	49.7	548	51.7
Total.....	<u>1,238</u>	<u>100.0</u>	<u>1,060</u>	<u>100.0</u>
<b>Succession Duties</b>				
Ontario.....	19	47.7	21	46.6
Rest of Canada .....	20	52.3	24	53.4
Total.....	<u>39</u>	<u>100.0</u>	<u>45</u>	<u>100.0</u>
<b>Total Direct Tax Collections<sup>1</sup></b>				
Ontario.....	1,298	49.6	1,204	49.0
Rest of Canada .....	1,320	50.4	1,253	51.0
Total.....	<u>2,618</u>	<u>100.0</u>	<u>2,457</u>	<u>100.0</u>

(1) Includes tax collections with respect to non-residents and undistributed income.

### EXPANSION OF PROVINCIAL SERVICES

Throughout the Second World War, the Province had budgetary surpluses and, like the municipalities, managed to reduce debt despite the fact that in the later war years, new and extensive commitments had to be met, especially in the field of education. Fav-

urable budgetary balances were achieved as a result of deferring many important works of a developmental nature. It was essential during those difficult years to conserve credit and abstain from levying new or increased taxation. By so doing, the Province allowed all available resources to be used in promoting production for military and civilian needs and, at the same time, prepared itself for the heavy financial obligations which would confront it in the post-war period.

With the cessation of hostilities, wartime restrictions were eased and action was taken to make needed repairs to existing roads and public buildings. At first, only the most urgent capital works were proceeded with, in order to avoid competing with private house building and the reconversion of industry to peacetime purposes. However, as the supply of labour and materials became more plentiful, the Province gradually extended its activities, in order to overtake the huge backlog of projects deferred during the depression of the 1930's and the war years, and at the same time, it sought to provide the increased services and undertakings necessary to an expanding economy. For these reasons, the post-war demand for provincial and municipal services has been exceptionally pressing. Not only have existing services been extended, but new services have been introduced which, translated into higher prices for materials and labour, resulted in a substantial rise in provincial expenditures. Thus, the net ordinary expenditure of the Province, exclusive of provisions for sinking funds and Highway Reserve Account, rose from \$121.4 million in the fiscal year 1945-46 to an estimated \$339.4 million in the fiscal year 1954-55. The latter amount includes \$7 1/4 million voted by the Legislature in March, 1955, for special grants to municipalities and school boards. Capital disbursements have risen

during the same period from \$5.5 million to \$97.4 million. Included in the latter amount is \$30.5 million charged to the Highway Reserve Account.

It is in the field of education that perhaps the most striking changes have occurred. Some impression of the magnitude of this problem is obtained from the fact that each year additional elementary and secondary school facilities must now be provided for a number of pupils equal to twice the total annual addition to our population prior to 1940. About \$50 million is now being spent in new schools each year. To assist in meeting these costs, provincial grants to local authorities for education have been raised many times. In 1945, a new grants system was adopted under which these were raised from about \$8 million to \$26 million and, since then, they have been increased each year, reaching a total of about \$71 million last year. With these grants, Ontario's educational budget is now about \$100 million a year.

Increased grants have also been paid to the universities to enable them to carry on a vast building program and meet the higher level of operating expenses associated with their larger enrolment. In the fiscal year 1954-55, grants to universities, including the special payments for capital construction and deferred maintenance, totalled nearly \$13.0 million, an increase of \$10.4 million over those paid in 1945-46.<sup>1</sup>

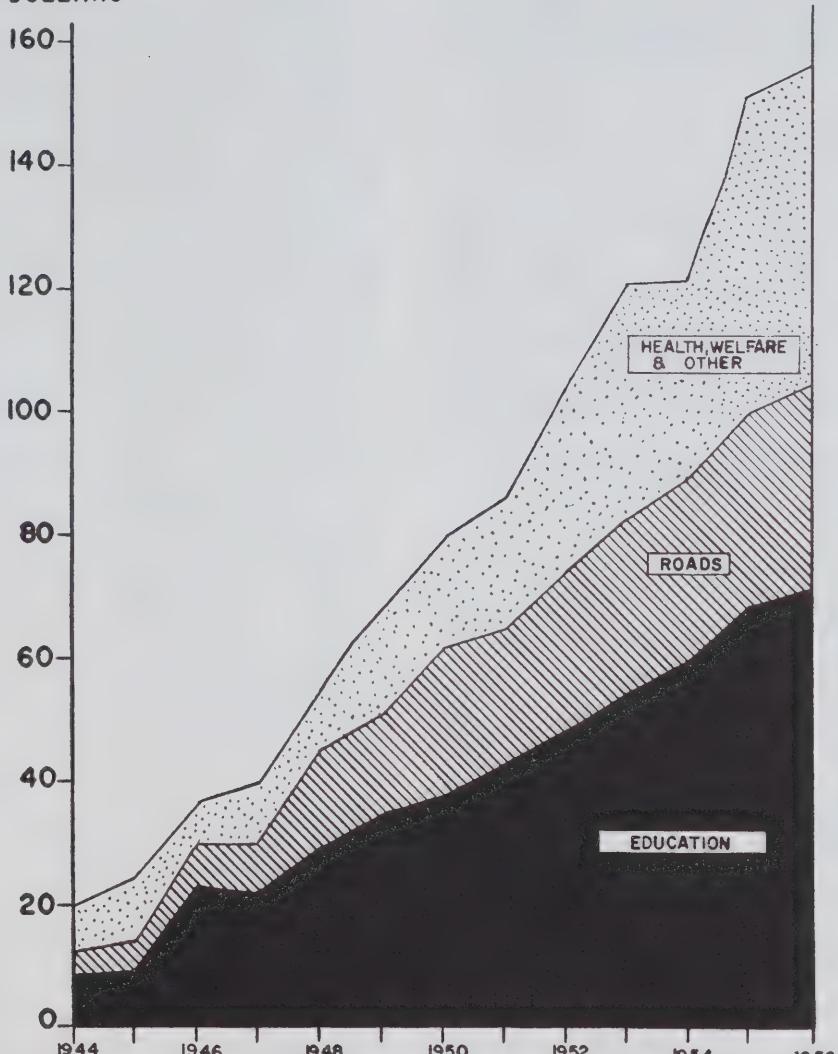
Substantially larger expenditures have been required for health services. Provincial aid for public hospitals has been greatly extended and services to needy persons expanded. Prior to 1946, assistance for public hospitals was limited to the payment of a portion of their costs for indigent patients. In 1946, grants were provided to cover all

<sup>1</sup> Does not include expenditures on the Ontario Agricultural College and the Ontario Veterinary College.

# ASSISTANCE TO MUNICIPALITIES BY THE PROVINCE OF ONTARIO

FISCAL YEARS ENDING MARCH 31, 1944 TO 1956

MILLIONS  
OF DOLLARS



1955 - INCLUDING SPECIAL SUPPLEMENTARY GRANTS.  
1956 - FORECAST

public ward beds in the teaching group of hospitals and, in the following year, were extended to apply to all hospitals. In subsequent years, the program was expanded and, in addition, beginning in 1949-50, special bonus grants for maintenance were paid to help meet rising hospital costs. The Province has not only greatly increased the maintenance grants paid to public general hospitals, but, since 1947, has also made available capital grants for hospital construction. Moreover, special grants for rehabilitation purposes and the acquisition of equipment have been provided in the past four years. All told, the assistance to public hospitals in the fiscal year 1954-55 amounted to \$21.8 million, as compared with \$1.2 million in 1945-46. Over the same period, grants to sanatoria jumped from \$2.2 million to \$6.4 million and the administrative and operating expenses of Ontario mental hospitals rose from \$7.2 million to \$20.9 million, while the Province's overall expenditure for health increased from \$12.7 million to \$57.2 million.

The welfare requirements of the people of Ontario have expanded in the post-war period. Despite the adoption in 1952 of a national old age security plan for persons 70 years of age and over, the cost of mothers' allowances, old age and blind persons' allowances, disabled persons' allowances and direct relief to unemployables rose from over \$12 million in 1945-46 to \$19 million in 1954-55. In 1949, the Province embarked on a progressive program to assist elderly persons who require care. Under the Homes for the Aged Act, 1949, it contributes 50 per cent of the cost of constructing new homes or enlarging existing homes as well as 50 per cent of the cost of maintaining such homes. In the same year, legislation was also passed, providing grants to municipalities of 25 per cent of

their statutory liability for the maintenance of children who are wards of children's aid societies. In addition, the Province pays to the societies an amount equal to 25 per cent of all the contributions they receive from private sources. These as well as other improvements have added considerably to the Province's expenditure on public welfare.

The management, conservation and development of natural resources have required higher provincial outlays in recent years. In agriculture, an expansion of educational facilities at the Ontario Agricultural College and the Ontario Veterinary College, and other educational, research and marketing services, has been carried out. The extension of electric power to the rural areas, the establishment of community halls and centres and the improvement of rural telephone services have also been valuable phases of the Government's farm program. In forestry, the underlying features of the Government's policy have been adequate protection, an intelligent utilization of timber resources, research and forest regeneration to replace what has been cut or lost. With the adoption of new and improved measures, much has been done towards placing the forest resources of this Province on a sustained yield basis. To encourage the development of our mineral wealth, a multiplicity of services has been provided, of which the extension of geological and geophysical services is a notable example. Another important program, introduced in 1951, is the construction of access roads to open up favourable mining areas. In the fiscal year 1954-55, the total ordinary and capital expenditures of the Departments of Agriculture, Mines, and Lands and Forests amounted to an estimated \$32 million as against less than \$13 million in 1945-46.

In recent years, the Province has embarked

on a huge program of highway construction and maintenance to overtake the arrears of highway projects deferred during the depression and war years and keep pace with the needs of a rapidly increasing motoring public. Since 1945, motor vehicle registrations have increased two and a half times, added to which are hundreds of thousands of vehicles from other provinces and the United States which use our highway system. Conscious of the pressing needs of municipalities for increased outlays on local roads and streets, the Province has greatly expanded its grants system. In 1947, legislation was passed to permit the payment of provincial road subsidies to cities, towns and incorporated villages, instead of only to counties and townships as formerly. Two years later, restrictions limiting the level of these payments were removed, thus permitting a substantial increase in grants to urban municipalities. With this extension of the grants system, provincial roads subsidies for municipalities and unincorporated townships in northern Ontario rose from \$7.3 million in 1945-46 to an estimated \$44 million in 1955-56. Altogether, the Province's combined ordinary and capital budget for highways and municipal roads is now nearly \$175 million. In addition, the municipalities are spending large additional amounts out of their own revenues.

Similarly, the Department of Public Works has in recent years been engaged in carrying out a large scale building program. In the fiscal year 1954-55, an estimated \$22 million was spent on new construction of, and extensive capital improvements to, buildings of the Ontario Hospitals and the Ontario Agricultural College, on teachers colleges as well as on various administration buildings, warehouses, stations and reform institutions. In all, ordinary and capital expenditure on

public works, including hospitals and conservation projects, amounted in 1954-55 to \$31.2 million, compared with only \$1.5 million in 1945-46.

Many other illustrations, such as the increased appropriations required for reform institutions, administration of justice, provincial police protection, labour relations and so on, could be cited of the effects on the Provincial Budget of population and industrial growth. All of these would confirm the upward trend we have outlined.

### TRENDS IN MUNICIPAL FINANCE

Municipal expenditures have increased swiftly since the war. They are now more than twice as great as in 1947 and are still growing. Most of the increase is a result of two pervasive forces, the post-war inflation and the rapid growth of population and industry.

The first, the general post-war inflation of prices and wages, is familiar to everyone. It has raised the cost of governing fully as much as it has raised the cost of living.

The second, the increase of population and industry, has called for an expansion of municipal services in all directions. There are now a third of a million more school children than in 1947 (with more to come), and to accommodate them no less than 9,000 classrooms have had to be built: if placed end to end, these rooms would extend from Toronto to Port Hope, or from Ottawa to Brockville. There are hundreds of thousands of new houses, and, in an effort to keep up with this expansion, almost a thousand miles of streets and street paving have had to be added, enough to stretch in a straight line from Toronto to the farthest point of Cape Breton Island. Meanwhile, to keep up with the

general increase in population and industry the services of police and fire departments, of waterworks and sewage and street cleaning, have had to be greatly extended, with more to come. These costly investments in social capital have been both the problem and the accomplishment of the post-war decade, and their financial consequences will be with us for a long time.

The figures of municipal expenditure tell only part of the story, and when expressed as province-wide totals they obscure important differences between localities. The figures do, however, give some idea of the extent and pace of this remarkable and costly development. In the 7 years ending 1954, municipal spending for purposes other than education rose to 2.15 times the 1947 level. Over the same period, spending for education rose 2.43 times. To aid the municipalities, school boards and kindred agencies in meeting these burdens, the grants and subsidies paid by the Province rose 2.76 times. In later chapters special attention will be given to schools, hospitals and roads.

In addition to the growth of current expenditures just described, there have been

large capital outlays, mainly financed by borrowing. In the 7 calendar years ending 1954, the value of proposed capital undertakings approved by the Ontario Municipal Board was \$922 million. In the same years, substantial amounts of outstanding debt were repaid so that the net increase in debt was only about one-half this sum.

The municipalities were in a strong financial position when the post-war expansion commenced, although faced with a heavy backlog of necessary maintenance, betterments and additions deferred during the years of depression and war. Their net debenture debt had been reduced from a maximum of \$446 million in 1932 to \$325 million in 1939, and owing to continuous repayment and little new borrowing during the war, it was down to \$182 million at the end of 1946. In that year, the debt was only \$49 per head, compared with \$138 per head in 1932.

In the next 8 years, the borrowings required for all manner of undertakings raised the net debt from \$182 million to \$681 million, an increase of no less than half a billion dollars. Seventy per cent of this increase took place during the years 1951 to

**Table 13—Financial Data of Ontario Municipalities, Selected Years 1926-1954**

Year	Municipal Assessed Population (000's)	Tax Levy <sup>1</sup> (\$000's)	Tax Collections			Taxes Outstanding		Net Debenture Debt Outstanding	
			Current and Arrears (\$000's)	Per Capita \$	As % of Current Levy %	Amount (\$000's)	As % of Current Levy %	Amount (\$000's)	Per Capita \$
1926	2,941	102,146	96,703	32.88	94.7	n.a.	—	356,431	121.18
1932	3,239	126,835	121,284	37.44	95.6	n.a.	—	446,066	137.70
1939	3,443	114,255	117,971	34.06	102.6	35,459	31.0	324,926	94.37
1945	3,612	108,163	110,003	30.45	101.7	11,722	10.8	195,513	54.13
1946	3,695	117,629	117,925	31.92	100.3	11,115	9.5	182,383	49.37
1947	3,854	135,348	133,406	34.61	98.6	10,885	8.0	193,148	50.11
1948	3,942	151,361	148,963	37.79	98.4	12,751	8.4	225,335	57.17
1949	4,083	171,450	166,808	40.86	97.3	16,221	9.5	262,342	64.25
1950	4,203	190,312	187,941	44.55	98.4	17,706	9.3	331,354	78.85
1951	4,326	226,033	220,709	51.03	97.6	21,947	9.7	425,406	98.35
1952	4,490	259,847	258,877	57.66	99.6	24,763	9.5	484,604	107.93
1953	4,648	279,920	279,146	60.06	99.7	27,288	9.7	587,906	126.49
1954	4,842	306,028	302,991	62.43	98.8	32,691	10.7	680,572	140.56

(1) Commencing with the year 1951, Tax Levy applies to taxation revenue only and excludes miscellaneous charges on the Municipal Tax Roll, amounting to \$2.2 million in both 1951 and 1954.

1954. On a per capita basis, net debt rose from \$49 to \$140. When allowance is made for the rise in the level of prices and incomes, the net debt as a percentage of personal income has not yet advanced to one-half of the figure reached in the late 1920's. It should be added that the proportion of more or less self-supporting public utility debt in the gross amount of outstanding debt is less today than in 1935, but has risen noticeably in the last two years.

In view of the embarrassment caused to some municipalities by their debts in the 1930's, and because it appears likely that the debt burden as a whole was a depressing influence on spending and employment at that time, the Government of Ontario has, in recent years, used both its financial power and its legislative authority to strengthen the finances and the organization of municipal government. By way of illustration, it may be remarked that the Province will contribute grants of about \$100 million, during the term of the debentures involved, toward municipal debt for school purposes, which for all municipalities in the Province totalled \$205

million at the end of 1954. Grants toward school debt were not in existence in the early 1930's.

Some municipalities have grown much faster than others and have been obliged to borrow exceptionally large sums for schools and various public works. For instance, in some of the suburban area municipalities

**Table 14—Current Expenditures and Provincial Grants, All Municipalities and School Boards in Ontario, 1947 and 1954**

	1947	1954 <sup>1</sup>
Education.....	\$78.8 mn. (100)	\$191.6 mn. (243)
Debentures (Principal and Interest).....	\$20.8 mn. (100)	\$50.6 mn. (243)
All Other Municipal Expenditure .....	\$113.9 mn. (100)	\$239.0 mn. (210)
Total Expenditure of Municipalities and School Boards <sup>2</sup> .....	\$213.5 mn. (100)	\$481.2 mn. (225)
Education as % of Total Expenditure..	36.9%	39.8%
Debentures (Principal and Interest) as % of Total Expenditure.....	9.7%	10.5%
Provincial Grants and Subsidies to Municipalities, School Boards, Hospitals and Other Agencies, in Nearest Corresponding Fiscal Year of the Province.....	\$55.0 mn. (100)	\$152.0 mn. (276)

(1) Estimated.

(2) Includes expenditure from Provincial grants and subsidies, paid to municipalities and school boards.

**Table 15—Ontario Municipal Board, Approvals of Proposed Capital Undertakings of Municipalities, 1948-1954**

	1948	1949	1950	1951	1952	1953	1954	Total
	(\$000's)	(\$000's)	(\$000's)	(\$000's)	(\$000's)	(\$000's)	(\$000's)	(\$000's)
Drains	1,310	1,395	6,100	1,584	4,977	8,959	9,703	34,028
Sewers	8,000	12,936	12,771	16,962	7,294	8,819	69,428	136,210
Water	11,514	8,233	28,092	14,738	10,226	16,167	39,486	128,456
Hydro	2,857	1,215	12,004	6,049	7,207	7,723	17,904	54,959
Public Schools	10,488	16,461	16,609	23,306	18,716	23,135	26,063	134,778
High Schools	11,296	9,150	11,992	11,695	14,519	10,943	14,765	84,360
Pavement	4,492	5,532	8,226	13,187	11,064	5,894	17,471	65,866
Sidewalks	1,766	2,608	3,326	2,811	3,120	2,806	3,902	20,339
Bridges	659	492	37	1,086	146	314	1,425	4,159
Road Machinery	375	244	777	641	464	308	593	3,402
Transportation Systems	6,575	380	2,022	5,254	12,132	18,003	13,056	57,422
Subways and Tunnels	—	859	15,100	15,000	1,565	—	1,525	34,049
Hospitals	11,258	5,300	8,158	17,727	4,301	4,112	6,836	57,692
Civic Buildings	5,546	1,454	1,078	1,234	480	2,183	1,056	13,031
Housing	377	399	1,897	1,927	125	5,042	70	9,837
Others	9,190	13,363	14,603	6,723	9,304	13,479	17,218	83,880
	<b>85,703</b>	<b>80,021</b>	<b>142,792</b>	<b>139,924</b>	<b>105,640</b>	<b>127,887</b>	<b>240,501</b>	<b>922,468</b>

now comprising Metropolitan Toronto,<sup>1</sup> the growth of population has been so rapid that serious overborrowing, or inability to borrow, might have arisen had the Corporation not been established. The increase in the populations of each of the 13 municipalities since 1940 varied from 5.3 per cent in Toronto to 641 per cent in North York and 494 per cent in Etobicoke. Thus the use of averages will not explain the circumstances in all municipalities.

**Table 16—Ontario Municipal Tax Collections and Debenture Debt as a Per Cent of Total Personal Income Received in Ontario, Selected Years 1926-1954**

Year	Total Personal Income (\$ million)	Tax Collections as % of Personal Income	Net Debenture Debt as % of Personal Income
1926	1,569	6.2	22.7
1932	1,263	9.6	35.3
1939	1,766	6.6	18.4
1945	3,729	2.9	5.2
1946	3,821	3.1	4.8
1947	4,068	3.3	4.7
1948	4,608	3.2	4.9
1949	4,953	3.4	5.3
1950	5,303	3.5	6.2
1951	6,083	3.6	7.0
1952	6,729	3.8	7.2
1953	7,196	3.9	8.2
1954	7,418	4.1	9.2

The trend in municipal tax collections has followed the general pattern of expenditures and debt. They declined between 1931 and 1945, began to rise sharply in 1946 and by 1954 reached \$302 million—nearly a three-fold increase in the last decade. On a per capita basis, after allowing for the rise in prices, the increase, though considerably smaller and by no means out of line with 20 years ago, has recently been appreciable.

Arrears of taxes, which had risen to 50 per cent of the current levy in 1934, were gradu-

ally worked off and reached what might be considered a normally sound position of between 9 and 10 per cent by 1946. They have risen only slightly since then. The burden of municipal taxation has been assuaged by the rise in total taxable assessment from \$3.1 billion in 1943 to \$3.3 billion in 1947 and to \$6.1 billion in 1954. The increase in the last 7 years has been 82 per cent.

The rise in municipal tax and debt has occurred in spite of the immense rise in provincial assistance. Increased assistance has been especially large in those fields where the pressures have been greatest, namely, education and roads. Important revisions have been made in various other grants, especially for mining municipalities. In addition, for the first time, an entirely new formula was devised to provide unconditional grants to all municipalities; these range from \$1.50 to \$4 per person, depending upon the size and type of municipality. Other new programs have included the provision of assistance for children's aid societies, homes for the aged, day nurseries and community centres. Of special importance was the enactment of legislation in 1953 providing for payments to municipalities in lieu of taxes on properties of the Province, Ontario Hydro and the Ontario Northland Railway. In all, grants to municipalities, school boards and associated bodies rose from \$18.3 million in 1942-43 to \$37.1 million in 1945-46 and then to \$152 million in 1954-55. These grants are now equivalent to about one-third of the Province's ordinary expenditure and have therefore become a heavy drain on the Province's Budget. But, to the municipalities, such grants approximate 50 per cent of their aggregate tax levy and there can be no doubt that their position would be difficult in the extreme without this help. This clearly

<sup>1</sup> Under the Metropolitan Toronto plan, the bulk of the debts of the 13 municipalities were consolidated.

**Table 17—Net Debt and Tax Collections as a Per Cent of Total Personal Income, All Ontario Municipalities, Selected Years 1926-1954**

Calendar Year	Total Personal Income in Ontario (\$ million)	Net Debt (Dec. 31) (\$ million)	Net Debt as % of Personal Income %	Tax Collections (\$ million)	Tax Collections as % of Personal Income %
1926	1,569	356.4	22.7	96.7	6.2
1928	1,781	372.4	20.9	107.4	6.0
1930	1,798	425.3	23.7	120.6	6.7
1932	1,963	446.1	35.3	121.3	9.6
1939	1,766	324.9	18.4	117.3	6.6
1945	3,729	195.5	5.2	110.0	2.9
1946	3,821	182.4	4.8	117.9	3.1
1947	4,068	193.1	4.7	133.4	3.3
1948	4,608	225.3	4.9	149.0	3.2
1949	4,953	262.3	5.3	166.8	3.4
1950	5,303	331.4	6.2	187.2	3.5
1951	6,083	425.4	7.0	220.7	3.6
1952	6,729	484.6	7.2	258.9	3.8
1953	7,196	587.9	8.2	279.1	3.9
1954	7,418	680.6	9.2	302.3	4.1

demonstrates the extent to which the Province is aiding the municipalities in maintaining essential services and keeping their tax rates within manageable dimensions.

### NEED FOR SOCIAL CAPITAL

Last year, the Province, the municipalities, Ontario Hydro and other public commissions and boards spent approximately \$700 million on new capital construction, maintenance and repairs. Highways and municipal roads formed a large part of this program. The Province's appropriation for these purposes amounted to \$175 million which, when added to anticipated municipal expenditures of \$45 million, made available a total outlay on highways and local roads of \$220 million. Large capital expenditures were made for electric power development and distribution, of which Ontario Hydro's share was \$110 million. Other significant capital expenditures included some \$60 million for schools and \$36 million for provincial public buildings.

The future requirements for these services

will reflect the needs of a growing urban population and of a more complex industrial economy. It is anticipated that over the next 10 years, the expenditure required on highways and local roads to overcome the present backlog and to provide for necessary expansion and maintenance will approach \$3 billion. Projections of elementary and secondary school enrolment would indicate that capital outlays from current and capital funds of well over \$500 million will be required over the 10 year period to provide new accommodation for the increase in enrolment. The expansion of water distribution systems, water supply works and water purification plants which is now required and can be expected to become more urgent is thought to involve a total capital cost over the next 20 years of \$1.1 billion. Sewerage works and sewage treatment plants call for a possible additional capital expenditure of \$1.3 billion over the same 20 years. Thus the estimated total capital expenditure needed under these heads in the longer period 1955 to 1975 amounts to \$2.4 billion. Up to the year

1965, which is the limit of the present forecast, about two-thirds of this last sum or about \$1.5 billion will be needed.

Also required in the next decade will be capital outlays of \$140 million for general, convalescent and chronic care hospitals and \$285 million for Ontario mental hospitals and other provincial buildings and facilities. Added to this will be capital expenditures for the development of electric power in the order of \$125 million to \$150 million a year, or from nearly \$1.3 billion to \$1.5 billion over the 10 year period.

In addition to the expenditures required for these major programs, further outlays will be required for a variety of other fields not

mentioned above. No doubt there will also be expenditures to meet the demand for entirely new services. Reductions in the cost of one or more of the projects comprised in the above program will probably tend to be offset by increases in the cost of other projects not wholly foreseen at this time. It does not seem unrealistic to us to suggest that at least \$7 billion to \$8 billion will be spent by the Province, its municipalities and commissions over the next decade to extend and improve Ontario's social capital.

In the following chapters and appendices, the major activities of the Province and its municipalities will be considered in turn, and estimates of their future requirements will be described in detail.

# Chapter 5

## EDUCATION

The public responsibility for education is a matter of peculiar urgency. Schooling cannot be postponed; there is no adequate substitute for it, and it is compulsory to a certain age. For these reasons, education has long been the special care of the Province, as shown by its early establishment of municipal school boards and by the later growth of provincial assistance by way of grants.

### SCHOOLS

It is now a commonplace that the number of school children has grown swiftly since the war and that many schools have been built or enlarged at great cost. The growth in the enrolment of pupils, which has been faster in Ontario than in any province except British Columbia, is shown in the following table.

**Table 18—  
Elementary and Secondary School Enrolment  
in Ontario, Selected Years 1900-1954<sup>1</sup>**

Year	Elementary School Enrolment (000's)	Secondary School Enrolment (000's)	Total Enrolment (000's)
1902	454	12	466
1912	467	32	499
1917	527	34	561
1922	601	62	663
1927	600	86	686
1932	580	112	692
1937	562	112	674
1942	527	109	636
1947	564	124	688
1948	585	126	711
1949	616	129	745
1950	635	132	767
1951	678	135	813
1952	735	143	878
1953	783	150	933
1954	821	160	981

(1) June enrolment—day students only. Elementary school figures include Kindergarten pupils.

The school enrolment of the future can be estimated for both elementary and secondary pupils from the numbers and ages of the children now living, and from the anticipated course of birth rates. The resulting forecast is more reliable for elementary than secondary pupils and for the near than the distant future. For all elementary schools in the Province, the following increases over the present level of 880,000 pupils are estimated:

- an increase of 193,000 pupils by 1960,
- a further increase of 205,000 by 1965,
- a further increase of 107,000 by 1970, and
- a further increase of 114,000 by 1975.

The increases are 22 per cent to 1960 and 45 per cent to 1965. Further details are given in the following table, which also refers to the secondary schools.

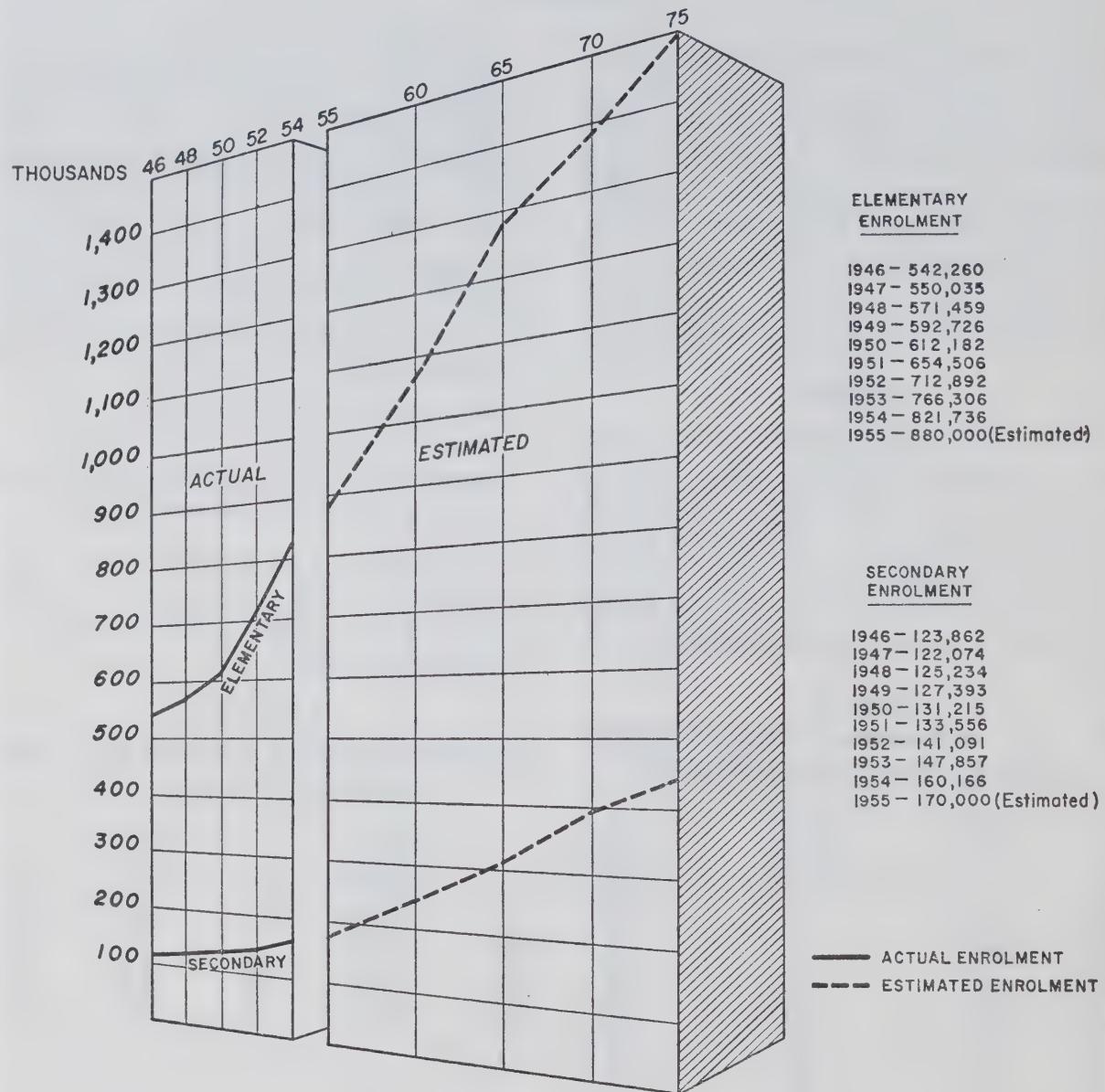
**Table 19—  
Projected Elementary and Secondary School  
Enrolment, Ontario, to 1975**

Year	Elementary School Enrolment (000's)	Increase (000's)	Secondary School Enrolment (000's)	Increase (000's)
1955	880 <sup>1</sup>	—	170 <sup>1</sup>	—
1960	1,073	193	246	76
1965	1,278	205	313	67
1970	1,385	107	396	83
1975	1,499	114	440	44

(1) Preliminary.

The estimates are necessarily in the form of totals for the whole province. They are useful for forecasting the number of teachers, the capacity of teachers' training schools, and the total number of additional class rooms

**ONTARIO'S SCHOOL ENROLMENT**  
**1946-1954 ACTUAL; 1955-1975 ESTIMATED**  
**(SEPTEMBER ENROLMENT)**



that will be required and hence the total capital cost involved. It is not possible, however, to predict very far in advance the exact point at which the need for further accommodation will be most pressing.

Recognizing the difficult problem faced by many growing municipalities, the Province of Ontario has increased its grants for schools. During the period from 1930 to 1943, grants paid ranged from \$4.8 million to \$8.3 million. Commencing in 1944, the basis of calculating the grants was altered and by 1946, the amount of provincial assistance had risen more than three times—to \$29 million. In the next 9 years, with growing numbers of pupils and the erection of a corresponding number of classrooms, the sums mounted steadily, increasing by no less than 145 per cent to a total of \$71 million in 1955.

Recently, moreover, the Province created a new type of municipal organization, the Municipality of Metropolitan Toronto. This new body aids education in its 13 member or area municipalities by a system of grants or assistance payments at so much per pupil, and by guaranteeing (up to a certain sum) the debentures issued by the member municipalities for the erection of new school buildings. In 1954, two-thirds of the tax revenues of the Metropolitan Corporation were devoted to education, mainly for assistance payments. Some of the Corporation's suburban members have experienced an unprecedented increase in pupils, and the aid they have received has been correspondingly large.

Returning to the experience of the Province as a whole, the growth in school attendance resulting from higher birth rates has thus far been confined to the elementary schools. The greater numbers of children who began coming into the world after 1941

are only now beginning to be promoted from the primary to the secondary level.

Several years ago, it had been expected that the birth rate would fall back to pre-war levels after the "baby boom" of the 1940's. A corresponding change in school attendance would naturally have followed after an appropriate interval. It now appears, however, that the increase of births is more permanent than had been supposed. In graphic terms, the recent curve of birth rates per 1,000 population has the appearance of a plateau rather than a wave or hump, for the rise which began after 1941 and was suddenly resumed at the close of the war has not levelled off as many had expected. In the first rise of fertility during and immediately after the war, the number of births in this Province advanced from about 64,000 a year to almost 109,000 over only eight years, the birth rate per 1,000 of population advancing from 17.3 to 26.1. In the second rise, which began in 1950, births rose steadily from about 109,000 to last year's record of about 140,000, or more than twice the number of 1940. This maintained the birth rate within its previous high level of 25 to 27 per 1,000. It may be added that a greater proportion of these babies than ever before will reach school age, surviving the diseases of childhood and commencing their education with sound bodies, thanks to improvements in the art of medicine, the hospital and health services, and their parents' level of income.

Not far behind the children born in the early war years are their younger brothers and sisters, born in the middle and late forties and still attending primary school. Each September, between 60,000 and 65,000 of these children will be admitted to the lowest grade of the increasingly crowded secondary schools, as compared with only about 44,000 a decade ago.

Even larger numbers will begin to enter the secondary schools about the year 1965, as the still more numerous babies of 1951 and later years begin to reach the age of fourteen.

A first approximation to the future enrolment in secondary schools is the anticipated population in the age group 15-19 in successive years. More than four-fifths of all secondary pupils are of these ages, most of the others being in their fourteenth year. In 1947, the enrolment of secondary pupils amounted to 38 per cent of the whole age group 15-19, and in each succeeding year the proportion enrolled increased, until in 1955 it reached 51 per cent of the whole group. In view of this rising trend in school attendance, the projection in Table 19 allows

the need for teachers is to be met, greater numbers must be trained in the normal schools and in universities. So great is the need that it will doubtless call for policies designed to promote both professional training and mobility, as well as recruitment of those most likely to remain in the teaching profession. The total number of new teachers to be trained must necessarily be greater than the net addition to the teaching staff since many teachers are lost to the profession through marriage and departure for other occupations.

To accommodate the growing masses of students, very heavy capital expenditures will be required. The capital cost per pupil will rise, moreover, as the new construction

**Table 20—Estimated Numbers of Additional Elementary and Secondary School Teachers Required to Meet the Needs of Expanding Enrolment to 1975  
(Exclusive of Replacement Needs)**

Period	Elementary Schools			Secondary Schools		
	Estimated Increase in Enrolment	Teacher-Pupil Ratio	Additional Teacher Needs (Exclusive of Replacements)	Estimated Increase in Enrolment	Teacher-Pupil Ratio	Additional Teacher Needs (Exclusive of Replacements)
1955-1960	193,000	1:30	6,400	76,000	1:24	3,200
1960-1965	205,000	1:30	6,800	67,000	1:24	2,800
1965-1970	107,000	1:30	3,500	83,000	1:24	3,500
1970-1975	114,000	1:30	3,800	44,000	1:24	1,800

for a further rise to 60 per cent over the next five years.

With more pupils in the schools, large additions to the teaching staffs will be needed. For elementary schools, the estimated increase over the next ten years is some 13,000 teachers, an expansion of about 50 per cent.

For secondary schools, the comparable increase is about 6,000 teachers, an expansion of no less than 90 per cent, almost twice the rate of expansion at the elementary level. In other words, the increase in the number of secondary teachers needed in the next decade will be as great as the whole net increase effected over the previous half century. If

becomes increasingly concentrated on secondary schools, where the average capital cost of providing an additional "pupil place" is about \$1,400 as compared with only \$600 in elementary schools. From Table 21, it will be found that by the year 1960 the primary schools must be expanded to hold some 22 per cent more pupils at an estimated capital outlay of some \$116 million, while the secondary schools must be expanded almost 45 per cent, with an outlay of \$106 million. The very heavy cost for additional secondary schools results from the combined influence of the greater costs per pupil and the more rapid increase in enrolment.

**Table 21—Projected Capital Outlays from Capital Funds for Ontario's Elementary and Secondary Schools to 1975**

Period	Elementary Schools		Secondary Schools		
	Estimated Increase in Enrolment	Estimated Capital Outlays at \$600 per new Pupil Place	Estimated Increase in Enrolment	Estimated Capital Outlays at \$1,400 per new Pupil Place	Estimated Total Capital Outlays
1955-1960	(000's) 193 <sup>1</sup>	(\$000's) 115,800	(000's) 76 <sup>2</sup>	(\$000's) 106,400	(\$000's) 222,900
1960-1965	205	123,000	67	93,800	216,800
1965-1970	107	64,200	83	116,200	180,400
1970-1975	114	68,400	44	61,600	130,000

(1) Present enrolment 880,000.

(2) Present enrolment 170,000.

The combined burden of operating costs and capital charges will naturally become much heavier as the anticipated expansion proceeds. An adequate treatment of future annual capital charges depends on the prospective rate of interest and the rate at which borrowings are repaid, and time has not permitted the required calculation of the hypothetical charges involved. The combined cost has therefore been approximated by increasing the present level of costs in each type of school in proportion to the anticipated growth of enrolment. In other words, it is assumed that costs per pupil do not rise. Table 22 shows that on this basis the total cost of elementary and secondary schools, including estimated annual capital charges, will more than double in the next twenty years. If the rather conservative assumptions of this estimate are borne out by events, the Province and the municipalities will be called upon to provide \$71 million more for elementary and secondary school education in 1960 than in 1954, an increase of 37 per cent. By 1965, the corresponding outlay will have reached \$321 million, an increase of 67 per cent over the 1954 level. In 1975, the staggering total of \$402 million may be required, a sum greater than all of Ontario's net ordinary expenditure in 1954-1955 and almost as much

as the present total of municipal ordinary expenditures.

**Table 22—  
Projected Costs of Elementary and Secondary School Education in Ontario to 1975, Assuming 1954 Gross Costs per Enrolled Pupil**

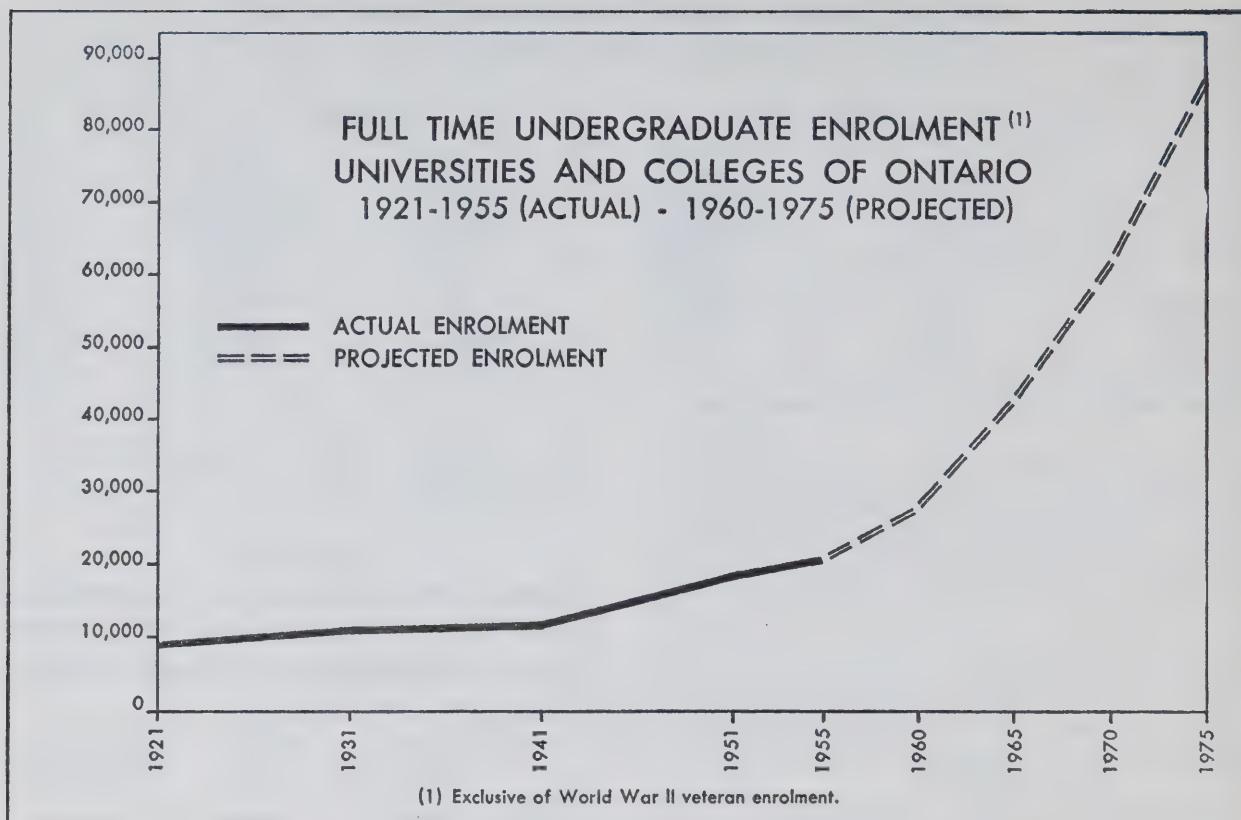
Year	Elementary School Costs (\$000's)	Secondary School Costs (\$000's)	Total Cost of Elementary and Secondary School Education (\$000's)
1954	134,400 <sup>1</sup>	57,200 <sup>1</sup>	191,600 <sup>1</sup>
1960	175,490	87,898	263,388
1965	209,122	111,909	321,031
1970	226,527	141,495	368,022
1975	245,155	157,145	402,300

(1) Preliminary.

## UNIVERSITIES AND COLLEGES

Four or five years after the larger numbers of youngsters have entered secondary school, they will begin to swell the size of freshman classes in universities and colleges. This phase will begin about the year 1960. In the universities, however, the forces which govern the size of the student body are more complex than in secondary or primary schools and hence a forecast made on the basis of population alone is of limited value. At present, the enrolment is increasing for reasons other than the larger population of student age.

Ideally, an estimate of future enrolment should take careful account of the anticipated



demand for graduates, preferably in each occupation, since the demand probably has as much influence on enrolment as the supply of potential students. Ideally too, an estimate should recognize that the number of those able to bear the cost of higher education varies with the circumstances and inclinations of their parents, the opportunities for employment, the cost of living, the weight of taxation, and other things. Whatever the role of these various forces, the number of students has tended to rise, not only in absolute terms but as a fraction of the population of student age. The proportion of those of student age (i.e., age 18, 19, 20 and 21 years) enrolled in universities has increased about two-thirds since before the war and has now reached 7.5 per cent. The growth in this percentage has persisted through good times and bad, though not always at the same rate,

**Table 23—**  
**Percentage of the Age Group 18-21 Enrolled**  
**as Non-veteran Undergraduates in Universi-**  
**ties and Colleges in Ontario, Selected Years**  
**1921-1955**

Year	Number in Age Group 18-21	Non-veteran Undergraduate Enrolment	Non-veteran Undergraduate Enrolment As % of Age Group 18-21
1921	196,700	9,050	4.60
1931	246,100	11,414	4.64
1941	266,500	11,693	4.39
1946	273,300	11,818	4.32
1947	272,300	10,446	3.84
1948	271,100	15,127	5.58
1949	270,200	17,082	6.32
1950	268,000	18,159	6.78
1951	264,300	18,677	7.07
1952	267,500	18,453	6.90
1953 <sup>1</sup>	268,500	18,399	6.85
1954 <sup>1</sup>	271,100	19,875	7.33
1955 <sup>1</sup>	271,800	20,364	7.49

(1) Preliminary.

and strongly suggests that a greater proportion of young people will attend the universities in future. With diffidence, and for want of a more detailed estimate which would command assent, a projection of university enrolment resembling that already given for secondary schools is given in Table 24. In this projection, it is assumed that a gradually rising proportion of those of student age will be enrolled. This assumption is consistent with the trend in the United States, where the fraction of young people receiving some form of higher education (under arrangements not wholly comparable with our own) has evidently been advancing for a long time and appears to have reached a higher level than in Canada.

**Table 24—**  
**Summary of Estimated Full-Time Undergraduate and Post-Graduate Enrolment in Ontario's Universities and Colleges to 1975**

Year	Full-Time Undergraduate Enrolment	Full-Time Post-Graduate Enrolment	Total Full-Time Enrolment
1955 <sup>1</sup>	20,400	1,300	21,700
1960	28,000	1,700	29,700
1965	42,700	2,600	45,300
1970	61,600	3,800	65,400
1975	87,000	5,600	92,600

(1) Estimated.

Turning now from the growing size of the student body to the costs involved, it is clear that both operating costs and capital expenditures will rise as the number of university students increases over the years, but the amount of the increase is peculiarly hard to estimate. Some university facilities are already overcrowded and expansion is now overdue. In others, where important extensions have been made in recent years, there is room for considerably larger numbers with little increase in either current or capital outlay.

This estimate of the situation recalls the experience of the post-war period, when the enrolment of returned soldiers more than doubled the student body in three years. In some university faculties at that time, the expansion was accommodated with much less than proportionate increases in either current or capital cost, though not without detriment to the quality of the work. In other faculties such as engineering, it was sometimes necessary to expand the staff and equipment very greatly. The consequences for all universities in Ontario in those years, in terms of total current expenditures and cost per student, are given in Table 25. A comparison of the second and third columns shows that current expenditures rose less rapidly than enrolment between 1941 and 1946, operating expenditure per student falling from \$597 to \$441 per student despite the rise in the level of prices and wages over those years.

Most of the subsequent increase in operating expense per student, as compared with 1941, may be traced to the rise of prices, wages, and salaries of teaching staffs. It may be added that the annual expenditure per student at the present time is about \$1,200, a figure which will be used in subsequent calculations.

**Table 25—**  
**Current Expenditures of Ontario's Universities and Colleges, 1936-1954**

Year	Current Expenditures	Total Enrolment (Undergraduate and Post-Graduate Students)	Current Expenditure Per Student
			\$
1936	6,241,583	12,817	497
1941	7,409,653	12,410	541
1946	9,582,278	21,741	495
1951	16,133,115	23,207	680
1952	18,842,971	21,406	868
1953 <sup>1</sup>	21,500,000	20,127	1,097
1954 <sup>1</sup>	23,500,000	21,424	1,087

(1) Estimated.

As Table 25 shows, an increase of enrolment can sometimes be accommodated, at least temporarily, with little increase in current expenditure. When the growth of enrolment is as large and permanent as that anticipated for the 1960's, however, the outlay for staff and general upkeep and administration will eventually rise in the same proportion. In other words, costs per student, although they may fall in the early stages of expanding numbers, will return to at least their present levels not long afterward, on the assumption that the purchasing power of money does not increase. There are reasons, moreover, for anticipating that costs per student will eventually rise above the present level. It is well established that where the student body is larger the salaries paid to the teaching staff are higher. Moreover, it is the common experience of every seat of learning that as its students become more numerous it is expected to offer a greater range of subjects, giving more attention to those professional, scientific and graduate studies in which instruction is particularly costly. A similar tendency has also been at work in the secondary schools in large cities where the average annual cost per pupil in attendance at technical schools has been found to be some 70 per cent higher than in the high schools and collegiates.<sup>1</sup>

Notwithstanding this prospect, the accompanying hypothetical statement or projection of university expenditures in Table 26 is based on the assumption of \$1,200 per student in every year, applied to the anticipated number of students already shown in Table 24. Employing this method of estimation, the increase of current expenditure over the \$23.5 million of 1954 would be 51 per cent in 1960, 131 per cent in 1965 and 234 per cent in 1970.

<sup>1</sup> Report of the Minister of Education, Ontario, 1952, p. 107.

**Table 26—**  
**Estimated Outlays from Current Funds,**  
**Ontario's Universities and Colleges to 1975,**  
**on the Basis of Assumptions Indicated**

Year	Full Time Enrolment (Undergraduate and Post-Graduate)	Current Outlays at \$1,200 per Student
		\$
1954	21,400	23,500,000 (\$1,097 per student)
1960	29,700	35,600,000
1965	45,300	54,300,000
1970	65,400	78,500,000
1975	92,600	111,100,000

A projection of capital expenditures is also subject to important reservations. Capital expenditures may be postponed longer than current ones in the face of a rising enrolment. When at last they are undertaken, large sums are usually required, sometimes in a short period, since university buildings are ordinarily erected in rather large units. It is possible, moreover, that it may be necessary to establish one or two entirely new universities in Ontario within the next two decades, lest the present universities become too large for effective work. The resulting capital outlay would be heavy and the Province would doubtless be obliged to contribute.

A number of the larger universities were recently asked to supply estimates of their future capital requirements. On the basis of the replies received and after making allowance for replacement costs, it is estimated that over the next ten years capital requirements for all the universities and colleges in Ontario will amount to between \$75 million and \$100 million. If one or more new universities were established, the required sums would be larger, but part of the costs would doubtless be deferred to the succeeding decade 1965-1975. One reason for the large capital sums mentioned above is the great initial cost of providing buildings

and equipment for instruction in scientific and technical subjects, now studied by a growing proportion of students.

In carrying the suggested capital sums to the general compilation of capital requirements, it has been arbitrarily assumed that the actual requirement is \$85 million, and that of this sum \$25 million is to be spent in the five years ending 1960 and \$60 million in the five years ending 1965. This division of the total is in accord with the relative expansion of enrolment anticipated in each five year period.

It has been suggested that part of the expansion of the universities might be avoided by the substitution of advanced technical schools and junior colleges, which are less expensive to construct. It is not certain whether their establishment would do much to relieve the situation, however, for they might serve mainly to draw their students from those who would not have attended university under any circumstances, and who would otherwise have ended their schooling at an earlier age. This might be a desirable result in itself but would complicate rather than ease the position of the universities, since it might create still further demand for additional teachers.

The Province is gratified by the assistance granted the universities by the Government of Canada, commencing in 1952, and believes that this aid should be extended. It also wishes to recognize the more considerate treatment of students' parents under the income tax amendment of 1953, which raised the age limit for dependent children. A comment may be made here upon university endowments, which are of special importance

to private institutions. It appears that although the capital involved has increased greatly since 1940, income has not risen in proportion, while its buying power has fallen, so that the contribution of endowment income to the principal private universities of Canada is now only about 16 per cent of their whole receipts as compared with 37 per cent in 1931. It may be desirable to consider the effect of taxation on the granting of endowments with a view to restoring their importance.

Before leaving this subject, it may be remarked that the advance of higher education is essential to Canada's development as a modern industrial power. Without larger numbers of university graduates, neither industry, nor the government, nor the educational system, nor the medical services can be expanded, as the growing stature of the nation requires. Convincing proof of greater emphasis on education will be found in the higher educational standard now demanded by most employers, a requirement which has no doubt led many students to continue their schooling beyond the compulsory period. Moreover, the recent concentration of intricate and highly diversified industry in the Province of Ontario has created an exceptional need for more specialized training, not only in the universities but in the secondary schools. Many of these needs are being met already, and further developments are planned, from which the whole country should benefit.<sup>1</sup>

<sup>1</sup> For additional comments on Technical schools and junior colleges, and economizing on university accommodation by adopting a more complete year-round operation, see Appendix IV, p. 185.



# Chapter 6

## HOSPITALS

### INTRODUCTION

Although hospitals and related health services are substantially self-supporting, they are the third most costly activity of the Province and its municipalities. The combined contribution of these two levels of government to the hospital and health services, on current and capital account, is estimated by the Dominion Bureau of Statistics at \$100 million, in round figures, for 1955. Approximately two-thirds of this sum is borne by the Province and one-third by the municipalities.

As in other parts of Canada, the relationship between the Provincial Government and the hospitals varies with the type of institution. Of the 19 mental hospitals in existence during 1954, the 17 operated by the Province and supported mainly from its purse cared for 95 per cent of the patients. Of the 16 tuberculosis hospitals, on the other hand, none is under Provincial auspices and all but 2 are under private auspices. Notwithstanding their private character, they derive some 70 per cent of their current revenue from provincial grants.

The public or ordinary hospitals form the third and largest group and number some 200 in all. Most of them are general hospitals, the remainder being devoted to convalescent and chronic cases. None of the public hospitals is operated by the Province. In 1953, 120 were operated by lay corporations, while

43 were under religious auspices and 23 under municipal. The public hospitals are largely self-supporting, but the Province contributes to their operating expenses by paying maintenance grants as well as special grants for capital purposes. Other general hospitals are principally those of the federal Department of Veterans Affairs; these are not dealt with in this study. Their capacity is about one-twelfth that of the public hospitals.

### MENTAL HOSPITALS

Mental hospitals will be dealt with first, as they are under the direct operation of the Province. Their cost per patient-day is relatively low as many of the patients are chronic or incurable cases—more than half of them having been in hospital more than 5 years. A much larger share of the cost is necessarily paid from the public purse than in the case of the general hospitals.

The total amount of accommodation provided in the 17 provincial mental hospitals, as measured by patient-days per year, is only 5 or 6 per cent less than that provided in the much more numerous but smaller public hospitals. In other words, there were almost as many meals provided and beds made in them as in all the public hospitals combined. The staff of the mental hospitals was, however, only about one-fifth as large.

The number of resident patients in the mental hospitals is now some 20,000. This number is naturally related to the size of the provincial population and, as this population grows, the number of patients may be expected to increase roughly in proportion. Other influences are also important in determining the future numbers of patients, however.

Before the Second World War, the number of resident mental patients in Ontario rose considerably faster than the population as a whole, from 297 per 100,000 in 1930 to 384 per 100,000 in 1939. After a slight fall during the war, the rate per 100,000 returned to its former level and, during the last 7 years, it has remained almost stationary at from 385 to 388, which is only a trifle above the pre-war maximum of 384 per 100,000.

From the stability of the rate since 1945, it might at first be supposed that the increase experienced before the war in the proportion of the population requiring the care of mental hospitals had come to an end and that hereafter an extension of hospital facilities would be required only in response to the general growth of the Province. Unhappily this is not so, for the accumulated needs are great and there are waiting lists to prove that many now outside the mental hospitals would be accommodated in them if space were available. Facilities have been crowded since the war, when the newly built and largest hospital, at St. Thomas, was loaned to the armed forces. By the time this structure was returned to the Province, the rapid growth of population had more than overtaken the available space. Despite the major increases in hospital capacity in 1950, 1951, 1954 and 1955, the number of people requiring mental treatment has been so great that the pressure is only now beginning to be eased.

The number of potential mental patients in the whole population is necessarily a matter of conjecture, but experience in other hospital systems shows that more beds are commonly required in proportion to population than Ontario has; the ratio here is slightly under 4 per 1,000 people of all ages. Since 1945, the federal Department of National Health and Welfare has favoured as an objective a ratio of beds to population of 575 per 100,000; this is in conformity with views held in the United Kingdom and the United States.

At present, however, Ontario's population contains an unusually large number of young people. Because of their youth, they are happily less prone to most forms of mental illness than their elders, although not free from congenital mental deficiency. A standard bed requirement, derived from other populations having a higher average age than Ontario's, must, therefore, be modified when applied to this Province. Ten to fifteen years hence, on the other hand, the maturing of Ontario's now youthful population will be accompanied by a marked increase in the number of mental patients.

It seems probable that Ontario's population contains as high a proportion of those who are either mentally deficient from birth or epileptic as other areas. Whether her population also contains as large a proportion of psychotic persons—that is to say, those with mental illness proper—as that known to exist in other areas is harder to estimate. An appraisal of these and other considerations has led those in charge of our mental hospitals to estimate that another 3,000 beds, over and above those now provided and soon to be available, are now required.

Many new construction projects to provide additional bed accommodation and other facilities for the mental hospitals are nearing

completion. Others are under way, in the planning stage, or marked for future construction. Major projects nearing completion include new facilities at Smiths Falls, Toronto and Port Arthur. The Smiths Falls Hospital will contain 2,200 beds and the largest hospital school in Canada. Major projects are underway at Brockville, Kingston, Woodstock, North Bay and elsewhere.

The patient population in residence in Ontario's mental hospitals has risen from 15,000 in 1946 to 20,000 at the present time. Provincial expenditures have risen sharply in recent years. Ordinary expenditures increased from \$7.2 million in 1945-46 to around \$20.9 million in 1954-55; capital expenditures in the 10 years up to 1955-56 will amount to an estimated \$46.2 million, of which no less than \$37.3 million will have been spent in the last 5 years. It should be noted that federal grants are included in the capital expenditure figures.

**Table 27—**

**Ontario Mental Hospitals: Patient Population in Residence, Ordinary Expenditures, 1945-1954 Actual, 1954-55 Preliminary, 1955 Onwards Forecast; Capital Expenditures, 1945-1955 Actual, 1955-56 Estimate**

Year	Patient Population <sup>1</sup>	Ordinary Expenditures (\$000's)	Capital <sup>2</sup> Expenditures (\$000's)
1945-46	14,553	7,182	51
1946-47	15,002	8,614	282
1947-48	15,464	9,431	1,232
1948-49	15,983	11,031	1,676
1949-50	16,286	12,511	2,240
1950-51	16,643	14,015	3,466
1951-52	16,862	16,024	4,687
1952-53	17,689	17,261	4,894
1953-54	18,238	18,799	6,773
1954-55	19,086	20,901	8,645
1955-56	19,564	23,453	12,320
1956-57		26,600	
1957		31,500	
1958		36,500	
1959		43,200	
1960		50,500	

(1) Figure applicable at beginning of fiscal year.

(2) Includes Federal grants.

Important changes have been occurring in the type of patient and in the work performed by mental hospitals even though the proportion of patients in residence to total population has been stable for some years, as noted above. The first change to be noted is that the proportion of the population receiving care has increased 42 per cent since the years 1944-46. The average annual admission rate for the 3 years ended in 1954 was 107.5 per 100,000, against 75.6 in the 3 years 1944 to 1946. The rate of readmissions increased more rapidly than that of first admissions. At the same time, the number of persons discharged as more or less cured also rose continuously, so that the proportion of the population actually resident in the hospitals has increased very little. In other words, a distinctly larger fraction of the community has received hospital care each year, but for shorter periods on the average; the turnover of part of the hospital population has risen accordingly.

More and more the role of the mental hospitals is to cure people as well as to care for them. In carrying out this function, there has been an important development of Provincial Mental Health Clinics, Consultant Psychiatric Services attached to certain general hospitals and Psychiatric Units in 8 general hospitals; each of the latter has a small number of beds for mental patients. The greater numbers now admitted to the mental hospitals or examined by these related agencies have increased the need for diagnostic services and facilities for treatment. To meet these needs, larger and more costly staffs, comprising psychiatrists and others with special training, are required.

Another change is the prolonged rise in the proportion of elderly patients in the mental hospitals, owing to larger numbers being admitted late in life. The proportion

of patients over 65 years of age has mounted from 13.6 per cent in 1943 to 19.6 per cent in 1954; the rate per 100,000 of population aged 65 and over has advanced from 635 to 891 over the same period, an increase of almost two-fifths. More recently there has also been a sustained rise in the rate for the next lower group, those aged between 55 and 65.

If this tendency were to continue, there is reason to believe that 10 years hence the proportion of the whole population aged 55 and over resident in the mental hospitals would reach some 1.8 per cent, or about 9,500 persons. This is roughly one-half the recent number of resident mental patients of all ages. Twenty years hence, the same tendency would result in more than 13,000 such patients of 55 and over being in mental hospitals, or about two-thirds as many as all those now in the hospitals.

Many of the older patients are merely suffering the milder forms of senile deterioration. Some of them require considerable nursing and most of them need a degree of custodial care. In an earlier and more rural society, with larger houses and households and fewer accident hazards, most of these aged people would doubtless have lived with their relatives. It was estimated that 1,100 of the aged patients in 1948, or almost two-fifths of all patients aged 65 and over, could have been housed elsewhere, had suitable accommodation been available.

With a view to increasing such accommodation, the provision of which is a municipal responsibility, the Province introduced in 1949 a plan of grants for capital construction, to encourage municipalities to erect new or additional accommodation in Homes for the Aged. Grants were also extended for the same purpose to religious and other charitable bodies. Up to January 3, 1956, grants

of \$10.7 million had been authorized for projects designed to accommodate 3,647 persons. The total capacity of the municipal homes was raised from 2,998 beds in 1948 to 4,765 at the end of 1955, while projects for 1,392 additional beds are now under way. The capacity of the homes operated by religious and charitable institutions is also being increased, space for some 4,000 persons now being available. The total capacity is thus almost 9,000. An important development in some of the recently erected homes is the provision of nursing care.

In estimating the future need for mental hospitals, it is assumed that the proportion of aged patients can be reduced. This implies that the alternative arrangements just outlined will be expanded to an appropriate extent. In Homes for the Aged, the cost per head per day will probably be somewhat less than in the mental hospitals and the surroundings should be more acceptable.

Another change is the recent introduction of a number of drugs suitable for the treatment of psychotic patients. It is too soon to estimate the effect of these drugs upon the number of beds required, but there is now a greater probability of worthwhile treatment than hitherto. It may be added that the new methods require a greater amount of professional supervision.

Forecasts of the costs of the mental hospitals indicate sharply increased expenditures, both on ordinary and capital account. Estimated operating costs, assuming some increase in price and salary levels, will rise from \$31.5 million in 1957 to \$50.5 million in 1960. The forecast of capital expenditures allows for bringing the accommodation up to the recognized standard of 5.75 mental hospital beds per 1,000 population during the 20 year period 1955-1975. The estimate provides for nearly 30,000 new beds at a cost of

nearly \$250 million. Altogether, total capital expenditure for mental hospitals in the 20 year period 1955-1975 is forecast at \$284 million.

**Table 28—  
Capital Expenditures on Ontario Mental Hospitals, Five Year Periods, Actual 1945-1955, Forecast 1965-1975<sup>1</sup>**

5 Year Periods	Amount
	\$
April 1, 1945 - March 31, 1950	5,482,000
April 1, 1950 - March 31, 1955	28,464,000
April 1, 1955 - March 31, 1960	79,000,000
April 1, 1960 - March 31, 1965	80,000,000
April 1, 1965 - March 31, 1970	68,000,000
April 1, 1970 - March 31, 1975	57,000,000

(1) Includes Federal grants 1945-55.

### TUBERCULOSIS HOSPITALS

The outlook for tuberculosis hospitals, which contain about one-fifth as many beds as general hospitals, has been greatly altered by recent advances in medical treatment. The death rate among tuberculosis patients has been reduced during the past 8 years to only a quarter of its former level, thanks mainly to the introduction of powerful drugs. Moreover, the number of newly infected persons entering the hospitals has not risen significantly for some time. Again, the total number of new cases detected has fallen to less than half its previous level, despite widespread X-ray examinations which covered no less than one-sixth of Ontario's population in a recent year.

At the end of 1955, there were 4,214 beds for tuberculosis, as compared with 3,656 in 1945. No new construction is planned, as an increase in bed requirements is not anticipated. At present, there are roughly 400 empty beds, representing 90 per cent occupancy. Consideration is being given to using these beds for other purposes, i.e. the treat-

ment of non-tuberculous chest conditions. No doubt during the next few years, some of the sanatoria will be turned over in their entirety for the treatment of other conditions, e.g., mental cases, the chronically ill or homes for the aged. Although it is very difficult to estimate what the tuberculosis situation will be in the future, it is believed that, by 1960, 1,000 fewer beds will be required than at present.

It is estimated that future operating costs of T.B. sanatoria up to 1960 will remain stationary at around \$7 million per annum. During 1945-1950, the Province paid out \$2 million in capital grants and \$46.8 million in maintenance grants.

As regards the future program, it should be noted that, until a specific vaccine or drug is found which will prevent the development of tuberculosis, increasing stress must be placed on finding new cases by all available means—surveys of the healthy population, pre-employment examinations and regular examinations of food handlers and other special groups. It is conceivable that in the future this disease can be eradicated if present control measures are maintained and active infectious cases are quickly found, segregated and treated.

### PUBLIC GENERAL HOSPITALS

Remarkable advances have been made in the treatment of illnesses in recent years. Diagnosis is now more scientific, communicable diseases and infections are dealt with more effectively and surgery, anaesthesia, blood transfusion and other forms of treatment are greatly improved and more widely available. The results may be seen in the virtual disappearance of some diseases, the swift cures effected in others and the renewed fall in death rates.

In achieving these results, the community has made increasing use of its hospitals, for hospitals alone can provide the special equipment, the continuous nursing services and the other professional services which are needed by the physician in treating patients who are acutely ill. More hospital space would have been needed even if the population had been stationary; the need has been all the greater because population has been growing swiftly.

In the 9 years ending in 1954, Ontario's population rose by 25 per cent. In the same period, the capacity of public hospitals of all kinds was increased, with great effort and expense, by about 50 per cent. Thus in the Province as a whole, the expansion of the hospitals exceeded the growth of population by a wide margin.

To be more precise, in public general hospitals the number of "active treatment beds" increased over the 9 year period 1945 to 1954 from 14,975 to 21,912 or from 3.74 per 1,000 people to 4.34 per 1,000. Over the same years, the number of beds in hospitals for chronic and convalescent cases increased by 135 per cent, to 0.88 per 1,000 people. It may be added that this expansion was

**Table 29—**  
**Hospital Beds in Public Hospitals and Tuber-**  
**closis Sanatoria in Ontario, 1944-1954**

Year	Active Treatment Hospitals	Convalescent Hospitals	Chronic Care Hospitals	Grand Total <sup>1</sup>
1944	14,293	306	1,444	19,812
1945	14,975	296	1,601	20,647
1946	14,497	308	1,643	20,139
1947	14,426	316	1,674	20,227
1948	15,150	235	1,980	21,299
1949	15,479	307	2,089	21,872
1950	16,318	320	2,327	23,112
1951	17,790	436	2,564	25,087
1952	18,765	450	2,725	26,258
1953	20,574	393	2,864	28,387
1954	21,912	665	3,789	30,831

(1) Includes T.B. and Isolation beds.

achieved despite an unprecedented increase in costs. The cost of erecting new hospital buildings and the wage rates of hospital staffs rose in this period to more than twice their former levels, owing mainly to the post-war inflation of prices and wages.

In 1947, the Ontario Government authorized the payment of capital grants to public hospitals and sanatoria for active treatment beds, nursery cubicles, chronic or convalescent beds and T.B. beds. In later years, the program was extended to psychiatric and detention beds, nurses beds and out-patient or auxiliary services accommodation. Grants are now paid on the following basis:

Active treatment beds .... \$1,000 for each bed  
Chronic beds ..... \$2,000 for each bed  
Convalescent beds ..... \$2,000 for each bed  
Nursery bassinets ..... \$ 333 $\frac{1}{3}$  for each bassinet  
Nurses beds ..... \$1,000 for each bed  
T.B. beds ..... \$2,500 for each bed

Out-patient and auxiliary services accommodation ..... \$ 3 $\frac{1}{3}$  for each square foot of floor area  
or

50 per cent of the cost, whichever is the lesser.  
Psychiatric beds ..... \$8,500 for each bed  
Detention beds ..... \$8,500 for each bed  
or

the difference between the grant payable by the Federal Government and the actual cost, where the latter is less than \$10,000, whichever is the lesser.

Further special grants have been paid to hospitals providing some special treatment facilities. For example, \$4 million has been paid to the Ontario Cancer Treatment and Research Foundation towards the Ontario Cancer Institute now under construction in Toronto, \$3 million to the Toronto General Hospital towards the cost of the 13-storey special services wing now under construction, and \$1 million to the new Hospital for Sick Children.

From 1947 to the end of 1955, approval was given to construction programs involving the following accommodation:

Active treatment beds .....	14,349
Chronic beds .....	2,793
Convalescent beds .....	833
Psychiatric beds .....	413
Detention beds .....	32
T.B. beds .....	715
Nurses beds .....	4,001
Total .....	23,136
Nursery bassinets .....	3,757

Including the special grants mentioned above, the Province approved in the period from April 1, 1947, to December 31, 1955, expenditures totalling \$44.7 million, of which \$39.2 million was paid.

In addition to the above grants made to hospitals with expansion programs, the Province has paid special capital grants to hospitals totalling \$20.8 million in the past 4 years. In 1952, the grant was paid to the teaching hospitals to assist in improving facilities for the teaching of medical and other students. In 1953, 1954 and 1955, the grant was paid to all hospitals on the basis of bed capacity and it was directed that the grant be used for certain specific purposes, such as major renovations and rehabilitation of the existing hospital property and the purchase of capital equipment.

The past year saw the completion of building programs at several large hospitals, 426 beds being provided at Victoria Hospital, London; 420 chronic beds at St. Vincent Hospital, Ottawa; 259 beds at the new Hotel Dieu Hospital, Cornwall, as well as smaller projects in many communities throughout the Province.

From 1947 to 1954, the total number of active treatment, convalescent, chronic care, T.B. and isolation beds rose from 20,227 to 30,831. Capital grants to public hospitals

rose from \$1 million in 1947-48 to \$13 million in 1954-55. In the same period, maintenance grants rose from \$2.2 million to \$9.3 million.

**Table 30—**  
**Capital Grants to Public Hospitals, New Construction and Additions, Etc., Fiscal Years 1947-48 to 1954-55**

Fiscal Year	Provincial Grants	Federal Grants
	\$	\$
1947-48	1,037,189	—
1948-49	2,187,015	47,849
1949-50	2,252,630	9,137,022
1950-51	2,162,924	1,783,165
1951-52	9,000,112	1,607,262
1952-53	14,382,487	3,398,359
1953-54	11,142,061	1,907,483
1954-55	13,007,433	2,226,982

Note: Provincial grants to public hospitals excludes grants to sanatoria but includes any special grants or special warrants related to the construction program, as well as special capital grants paid in 1952, 1953, 1954 and 1955.

**Table 31—**  
**Provincial Maintenance and Special Maintenance Grants to Public Hospitals, 1944-1955**

Year	Grants <sup>1</sup>
	\$
1944-45	1,213,577.00
1945-46	844,178.53
1946-47	1,653,865.58
1947-48	2,199,999.24
1948-49	6,291,078.92
1949-50	7,077,107.26
1950-51	7,840,518.06
1951-52	8,070,784.71
1952-53	9,037,320.63
1953-54	9,112,895.27
1954-55	9,331,968.25
1955-56 (est.)	10,690,000.00

(1) Excludes sundry grants to hospitals for out-patients, expectant mothers, infants, mental and isolation patients, amounting to about \$250,000 per year from 1951-52 onwards.

In some areas, continued pressure on the capacity of the public general hospitals shows that more beds are still needed, despite the attainment of an improved standard throughout most of the Province. Further growth will also be required as the population rises, but the principal need is for more beds for convalescent and chronic cases.

The pertinent questions for the longer term future are how great the demand on the hospitals will be, how much it will cost the hospitals to provide the service required and from whom and on what basis they will obtain their revenues.

The answers to these questions depend on each other, hence predictions cannot be very accurate. The demand for service (i.e., the number of people who seek admission to hospital and the average number of days of care they require) depends in part on whether the individual pays his hospital bills directly or through an insurance organization. It has been the experience of hospital pre-payment or insurance systems, both private and public, that when patients' bills are paid through an insuring organization the hospital admission rates increase. Up to a certain point, this is to be expected and even desired, for there can be little doubt that many patients at one time or another need hospital service which they cannot afford without the protection of insurance. Beyond that point, however, an increase in the number or amount of claims is an abuse and, in any future arrangements, it may be desirable to introduce the commonly employed methods of co-insurance and deductible feature as an automatic restraint.

The payment of personal hospital bills through the agency of insurance organizations has now become very important in Ontario. No less than 49 per cent of the charges of 145 principal hospitals in Ontario in 1953 were paid on behalf of patients by the various insuring organizations, including the provincial Workmen's Compensation Board.

Coming now to the cost of hospital service; much depends on the type of service provided. General hospitals are extremely costly to build and to operate. Hospital care for

convalescent and chronic patients can be provided at roughly half the cost of general hospitals, per patient day, while their capital costs are also lower in about the same degree. An economical system would preserve a suitable balance between the more and the less costly facilities while meeting the needs of patients more adequately. In the larger centres of population, this should be practicable and greater emphasis on lower cost facilities is anticipated in the forecast of hospital construction below.

If total hospital expenditures were to rise appreciably owing partly to the extension of hospital insurance coverage, the hospitals would require a corresponding increase of income. The governments of Ontario and its municipalities are already deeply committed in the field of hospitals of all types, including mental and T.B., to the extent of some \$80 million a year, to which should be added \$20 million for other activities relating directly to health. Their total annual expense for these purposes is thus about \$100 million, which is about one-third of the yield of all local property taxation. In view of this \$100 million already being spent and the still larger sums that will be needed 5, 10 and 15 years hence, and in view of the great sums also needed for education, roads, sanitation and other purposes, these governments will not be able to contribute to the required increase of hospital income unless they can secure appropriate additions to their own revenues.

As regards future facilities, emphasis will have to be placed on the need for more convalescent and chronic care beds. In the field of public general hospitals, where most of the present capacity lies, rather large additions are now being made. Within 2 or 3 years, most of the accumulated need for this type

of hospital will have been met, the subsequent program for the years 1958, 1959 and 1960 being required mainly to meet future population growth. The capacity of the public general hospitals, if supplemented by other facilities, should be able to satisfy the larger demand which would result from an extension of a carefully designed hospital insurance plan to all the population.

Under a comprehensive system of hospital insurance, the greatest proportionate expansion in demand for services may be expected in smaller centres where hospital insurance has not hitherto been important. The additional capital cost which might result from such an expansion is not known.

The estimates of future costs assume that before the completion of the present program for public general hospitals, the emphasis will be shifted to the erection of less expensive buildings for convalescent and chronic patients. The total annual increase in capacity is thus expected to continue at about present levels until 1960, but the capital cost per additional bed is expected to fall as more buildings of the less expensive type are erected.

A program for out-patient diagnostic services and home care was suggested at the Federal-Provincial Conference in October, 1955. These programs were designed as

elements of a broadened hospital insurance plan and as a further means of reducing the demand for costly in-patient care.

The projected capital expenditure on public general, convalescent and chronic care hospitals in the 4 year period 1957-1960 is between \$60 and \$70 million. It provides for an increase in active treatment beds from 27,150 in 1957 to 28,750 in 1960. Over the same period, it is anticipated that the number of convalescent beds will rise from 600 to 2,100 and the number of chronic care beds from 4,365 to 5,865.

As regards the total cost of a comprehensive

**Table 32—  
Estimated Bed Capacity of Public Hospitals,  
Ontario, 1954-1960  
(on the Assumptions Described in the Text)**

Year <sup>1</sup>	Active Treatment Beds	Convalescent Beds	Chronic Care Beds
1954 (Actual)	21,912	324 <sup>2</sup>	3,789
1955	23,175	598 <sup>2</sup>	4,126
1956	24,425	598 <sup>2</sup>	4,347
1957	26,156	598 <sup>2</sup>	4,377
Add about 1,000 Private & Isolation Beds			
1957*	27,150	(say) 600	(say) 4,365
1958*	27,950	900	4,665
1959*	28,450	1,400	5,165
1960*	28,750	2,100	5,865

(1) As at December 31.

(2) Includes summer camps, calculated at 1/6 of 420, or 70 beds.

(\* ) Assumes hospital plan and increased demand in these years.

**Table 33—Estimated Capital Expenditure on Public General, Convalescent and Chronic Care Hospitals in Ontario, 1956-1960**

	Active Treatment Beds (General Hospitals)		Convalescent and Chronic Care Beds <sup>4</sup>		Total	
	Higher Estimate <sup>2</sup>	Lower Estimate <sup>3</sup>			Higher Estimate	Lower Estimate
Increase 1960 <sup>1</sup> over 1956 <sup>1</sup>	3,331		3,030			
Capital Cost in 4-Year Period	\$46,600,000	\$36,600,000	\$22,700,000	\$69,300,000	\$59,300,000	
Average Annual Cost	11,600,000	9,100,000	5,700,000	17,300,000	14,800,000	

(1) As at December 31.

(2) Calculated at \$14,000 per bed.

(3) Calculated at \$11,000 per bed.

(4) Calculated at \$7,500 per bed.

hospital insurance plan, it should be observed that the estimated costs assume an economical combination of facilities of the types already indicated. It is the view of the Province that a comprehensive hospital service plan should include as benefits the cost of hospitalization for mental illness and tuberculosis as well as for ordinary illnesses.

On the basis of the estimate of beds avail-

making a substantial contribution. The net increase in expenditure would come from rendering a larger volume of hospital services to those not receiving adequate care today, most of whom would in turn be contributing to the plan on the same basis as others. There would thus be mainly a redirection of existing private expenditures through public channels, while the benefits of insurance protec-

**Table 34—Estimated Costs of a Comprehensive Hospital Services Plan, Ontario, 1957-1960.**

Services	1957	1958	1959	1960
(\$000's)				
Hospital Services:				
General	120,400	135,000	150,300	166,100
Convalescent	1,900	2,500	4,100	6,600
Chronic	13,400	15,000	17,500	20,900
Diagnostic Services	16,400	16,800	17,900	17,600
Home Care Programs	5,500	5,600	5,700	5,900
<b>TOTAL</b>	<b>157,600</b>	<b>174,900</b>	<b>194,800</b>	<b>217,100</b>
Total with 5% for administration	165,500	183,600	204,500	228,000

NOTE: When Mental Hospitals and Tuberculosis Sanatoria are included, the estimated cost would increase by \$38.5 million in 1957, \$43.5 million in 1958, \$50.2 million in 1959 and \$57.5 million in 1960.

able and projecting costs from the 1950-1954 period, the costs of a comprehensive hospital care plan would approximate \$165.5 million in 1957 if introduced in that year and reach \$228.0 million in 1960. This excludes the cost of mental hospitals and tuberculosis sanatoria.

Only a part of these sums would represent a net increase in expenditure for the community as a whole, since patients are already paying either directly or through insurance organizations for a large volume of ordinary hospital services, while governments are also

tion would be more widely enjoyed. The amount contributed by the ordinary individual would be uniform over the years rather than fluctuating according to the extent of his illness.

Expenditures for the services of hospitals of the magnitude indicated need careful examination. In view of the desirability of equalizing standards of services among provinces, and equalizing costs among taxpayers of varying incomes, substantial sharing of costs by the Federal Government would be essential.

# **Chapter 7**

## **HIGHWAYS AND ROADS**

### **INTRODUCTION**

The demand for highways, like the demand for railway and other public utility services, comes from many quarters. Motor trucks and other commercial vehicles form what may be called the hard core of road traffic for which there is no known substitute. They are the freight carriers of local trade, just as trains and cargo vessels are the freight carriers in the commerce of nations. The whole of the immense tonnage of agricultural produce is moved away from the farms entirely by way of local roads. The millions of tons of coal and oil used as household fuel in towns and cities must be delivered to the consumer by road transport, while construction materials, which are among the heaviest articles of commerce, must be handled in similar fashion. Again, all the food, clothing, and other merchandise bought in retail shops must first be delivered to merchants by road transport.

Thus, it is no exaggeration to say that the whole flow of merchandise into consumption, however far it may have come by sea or rail, must also travel at least once or twice over local roads before it reaches its final destination in the hands of the consumer. This will be true no matter how perfect the facilities for rail-borne and water-borne freight may be. In the course of handling these great tonnages, the movement of trucks and vans

may sometimes be a hindrance to the drivers of fast passenger autos. At times, too, it may be necessary for government to check the tendency toward the use of commercial vehicles which are too large or too heavy for the roads. Nevertheless, it must be emphasized that the provision of highways and urban streets capable of handling this essential commercial traffic, and of assuring the rapid movement of ambulances, fire-fighting equipment, police cars, and other essential vehicles, is one of the main cares of provincial and municipal government.

Part of the daily movement of passenger autos is likewise indispensable. It includes a substantial part of the passenger vehicles on the roads, such as those of farmers and other country and suburban dwellers, commercial travellers and others whose occupational needs cannot be met by buses or various forms of rail transport. The future demand for highways from this large and diverse field of commercial and essential private vehicles is probably linked very closely with the physical volume of business.

The remaining demand for highways comes from other quarters, and is more variable. For many persons who live within towns and cities and do not employ a vehicle in making a living, the ownership of a passenger car is to some degree optional and the extent to

which it is used varies greatly, depending on the adequacy of public transportation.

There are some types of passenger movement in private cars for which buses and trains do not offer an effective alternative. These comprise various types of traffic which fan out over a large area at one end, or both ends, of a busy main route. Such is traffic movement between the market towns and the farms: it proceeds part of the way from town by main routes and then gradually scatters over the vast mileage of township roads. Some of the traffic from large cities to their more distant suburbs is of the same kind. Such, too, is the movement to northern holiday resorts in the summer, where traffic proceeds over densely travelled roads for 25, 50 or 100 miles and then spreads out over a great number of subsidiary roads in such areas as Lake Simcoe, Kawartha Lakes, Rideau Lakes, Muskoka, and the highlands of Haliburton, Hastings and Renfrew. The resulting problem is peculiarly intractable, for most of the added traffic, which causes serious congestion, occurs on only a few days of the year, and, despite its sporadic nature, requires heavy additional investment. Such are some of the problems of designing highways and roads to meet the needs of the people.

#### THE PRESENT HIGHWAY PROBLEM

Ontario's highway problem has developed over a long period. During the 1930's, the growth in motor traffic outstripped the improvements in the highway system, and even this program, however inadequate, had later to be curtailed under the imperative necessities of war. From 1945 on, the situation was aggravated by the unprecedented rate of increase in the number of Ontario motor vehicles—particularly heavy commercial trucks—the growth in motor tourist travel,

the rise in construction costs and the shortages of labour and materials.

Although both dollar and real expenditures on Ontario highways have increased at a remarkable rate since 1945, the volume and weight of motor traffic have increased at an even faster pace. The net result is that serious congestion exists on certain main highways and urban thoroughfares, particularly in southern Ontario, resulting in considerable inconvenience to motorists and a hindrance to industry and commerce. Rectification of this situation will require programs of highway and street improvement, involving both the Province and municipalities in greatly increased expenditures extending over many years.

Ontario's 74,000 miles of highways and rural roads and her 7,000 miles of urban streets include all types. At one extreme is a considerable mileage of little used earth roads and at the other a much smaller mileage of wide, expensive and heavily travelled interurban highways of the most modern kind. The principal development since 1922 has been the increase in the mileage of improved and paved highways. Total mileage has increased only slightly since 1941.

Table 35—Road Mileage in Ontario,  
Selected Years 1922-1954

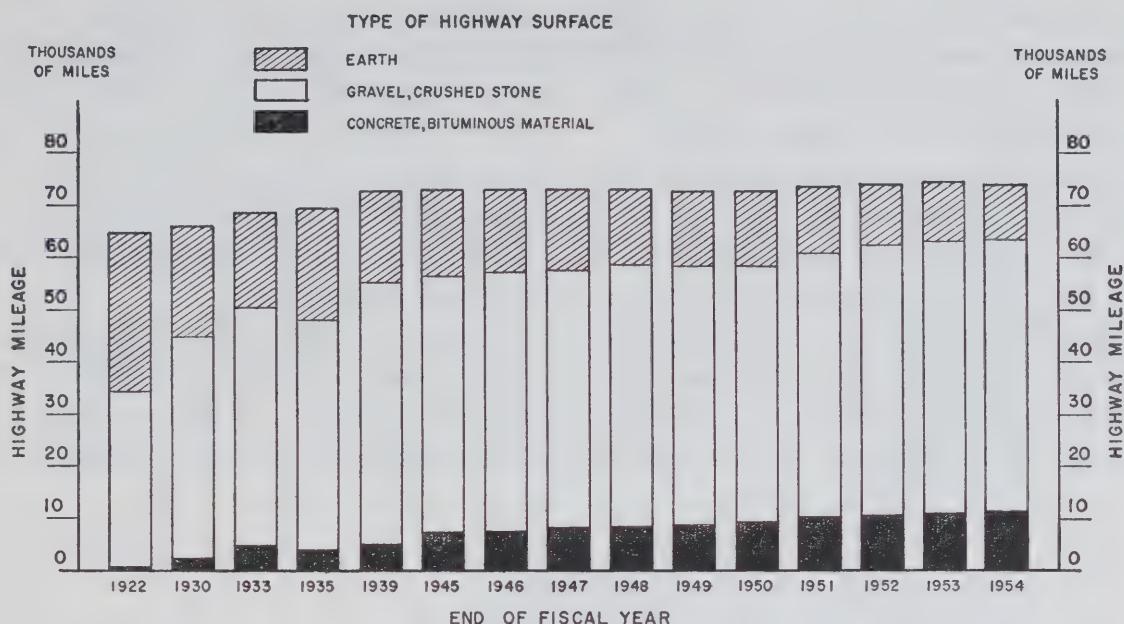
	Highways and Rural Roads			Urban Roads and Streets <sup>3</sup>	
	Total	Paved <sup>1</sup>	Other Surfaces <sup>2</sup>	Earth	
(Thousand Miles)					
1922	64.2	0.6	33.1	30.5	—
1930	65.9	2.7	42.0	21.2	—
1935	69.3	4.0	43.9	21.4	—
1941	72.4	6.8	49.5	16.1	—
1946	73.0	7.7	49.4	15.9	—
1951	73.8	10.1	50.8	12.9	6.9
1954	74.4	10.9	53.0	10.5	7.2

(1) Concrete or bituminous material.

(2) Gravel or crushed stone.

(3) Complete figures not available prior to 1951.

**HIGHWAY IMPROVEMENT IN ONTARIO**  
**SELECTED YEARS 1922-1954**



The responsibility for roads is divided between the Province and the municipalities. The Government of Ontario is wholly responsible for between 10,000 and 11,000 miles of King's Highways and secondary roads, and pays the full cost of constructing development roads. In addition, it contributes a large share of the cost of county and township roads, and of city, town and village streets. Administrative responsibility for about four-fifths of Ontario's total road mileage is vested in the counties, townships, cities, towns and villages which, as explained, receive substantial provincial subsidies, as shown in Table 36.

**Table 36—Total Highway and Road Mileage, 1954, and Schedule of Provincial Subsidies**

	Mileage, December 1954	Provincial Subsidies as Percentage of Approved Expenditures	
		Roads	Bridges
Provincial Roads	10,758	—	—
County Roads:	9,348	50%	80%
Township Roads:			
Organized townships	49,213	50-80%	50-100%
Unorganized townships	4,822 <sup>1</sup>	(mostly 50)	(mostly 80)
Development roads		100%	100%
City, Town and Village Streets:			
Cities, and towns separate from counties	7,210	33 1/3%	33 1/3%
Towns and villages		50%	80%
Metropolitan Toronto <sup>2</sup>	277	50%	50%
<b>Total</b>	<b>81,628</b>		

(1) Mileage included in organized townships.

(2) Includes only those roads for which the Metropolitan Corporation is responsible.

Motor vehicle registrations in Ontario have increased about  $2\frac{1}{2}$  times in the last decade. For every 100 vehicles of all kinds licensed in 1945, there were 244 in 1955. For every 100 passenger cars in the earlier year, there were 232 in 1955, and for every 100 commercial vehicles, there were 287.

All parts of Ontario have shared in this growth. Vehicles licensed in cities are now about two to three times as numerous as a decade ago. For counties and districts, including towns and cities, the average increase is somewhat less. In every county and district, including a few with almost stationary population, the increase has been at least 50

per cent and, in 31 out of the whole 53 divisions, the number of motor vehicles has more than doubled since 1945.

The increase in the number of heavy commercial vehicles weighing more than 10 tons is especially striking. They are more than 15 times as numerous as in 1945 and have increased over 5 times as fast as all commercial vehicles. In general, commercial vehicles cause special additional construction and maintenance costs.

Studies of traffic density reveal that, at certain times of the day, almost all of the principal highways of the Province suffer from moderate to extreme congestion. The

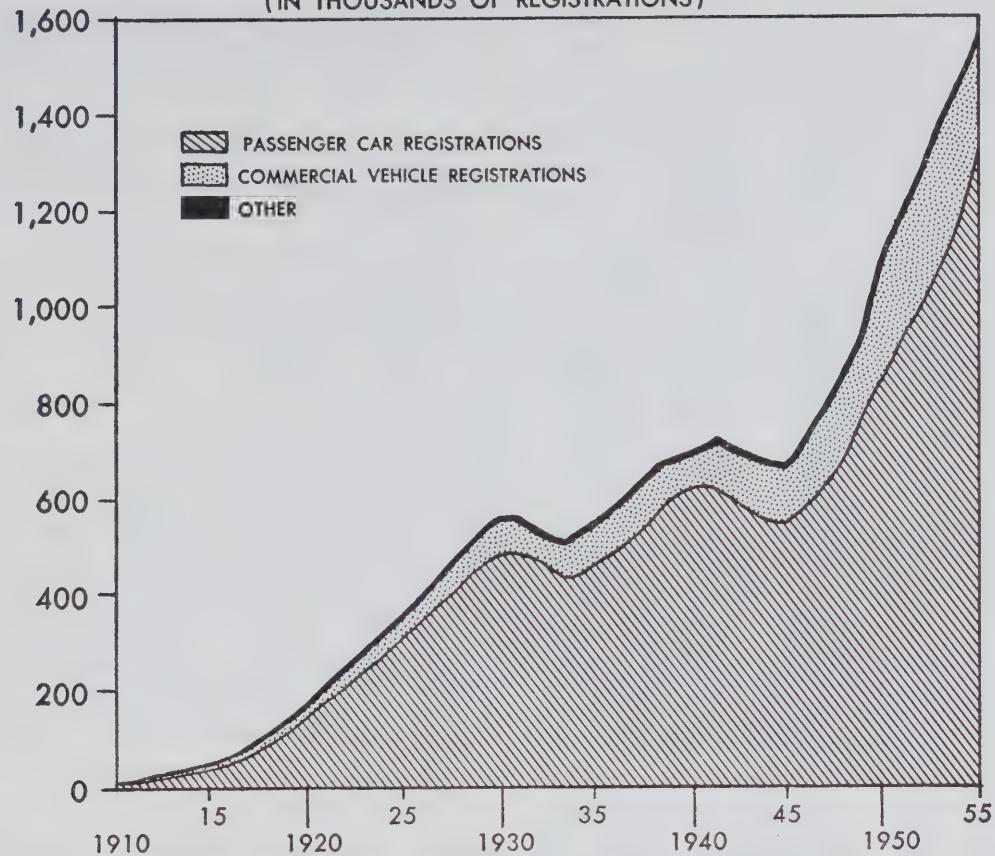
**Table 37—Motor Vehicle Registrations in Ontario, Selected Years 1910-1955**

Year	Passenger Cars		Commercial <sup>1</sup>		Commercial as % of Passenger	All Vehicles <sup>2</sup>		Heavy Commercial (over 10 tons)	
	No.	Indexes	No.	Indexes		No.	Indexes	No.	Indexes
1910	4,230	—	—	—	—	4,230	—	—	—
1920	155,861	—	16,204	—	10.4	177,561	—	—	—
1930	490,906	—	61,690	—	12.6	562,506	—	—	—
1941	636,624	—	95,022	—	14.9	739,194	—	—	—
1945	555,461	100	100,234	100	18.0	662,719	100	2,081	100
1950	881,143	159	100	202,800	202	100	1,104,080	167	100
1954	1,187,725	214	135	272,241	272	134	1,489,980	225	135
1955	1,291,000	232	146	288,000	287	142	1,616,000	244	146

(1) Trailers, motorcycles and dual purpose vehicles not included.

(2) Trailers not included.

**PROVINCE OF ONTARIO  
MOTOR VEHICLE REGISTRATIONS  
1903 — 1955**  
(IN THOUSANDS OF REGISTRATIONS)



"COMMERCIAL" Includes Motor Buses.

"OTHER" Includes Motorcycles, Dual purpose vehicles.

and beginning in 1950, Station Wagons and similar vehicles.

\*Estimated.

situation is similar in the chief urban areas and their vicinity. Some idea of the volume of motor traffic which certain roads are now obliged to carry may be obtained from a traffic count at West Hill, one half mile to the west of King's Highway No. 2. More motor vehicles pass this point in 10 days than there are in the whole Province of Manitoba. One day's total at this point exceeds all the motor cars in Prince Edward Island and four days' total almost equals the number in New Brunswick. Moreover, there are other sections of Ontario highways, such as on the Queen Elizabeth Way between Oakville and Toronto, where the density of traffic is much greater again.

### EXPENDITURE BACKLOG

In the light of these circumstances, we have projected the expenditures required to alleviate the present congested condition of highways in the Province. The amounts proposed may seem large in view of the volume of highway and road construction accomplished since 1945, but it should be remembered that throughout the past quarter of a century, the attainment of an adequate highway system has been checked by successive events beyond the control of the Province. Since the end of World War II, a considerable mileage of 4-lane highways has been built and nearly 4,000 miles of heavily used gravel roads have been finished with concrete or bituminous surface. So rapidly has traffic mounted, however, that this con-

struction, large as it has been, has made little headway against the backlog that existed in 1945.

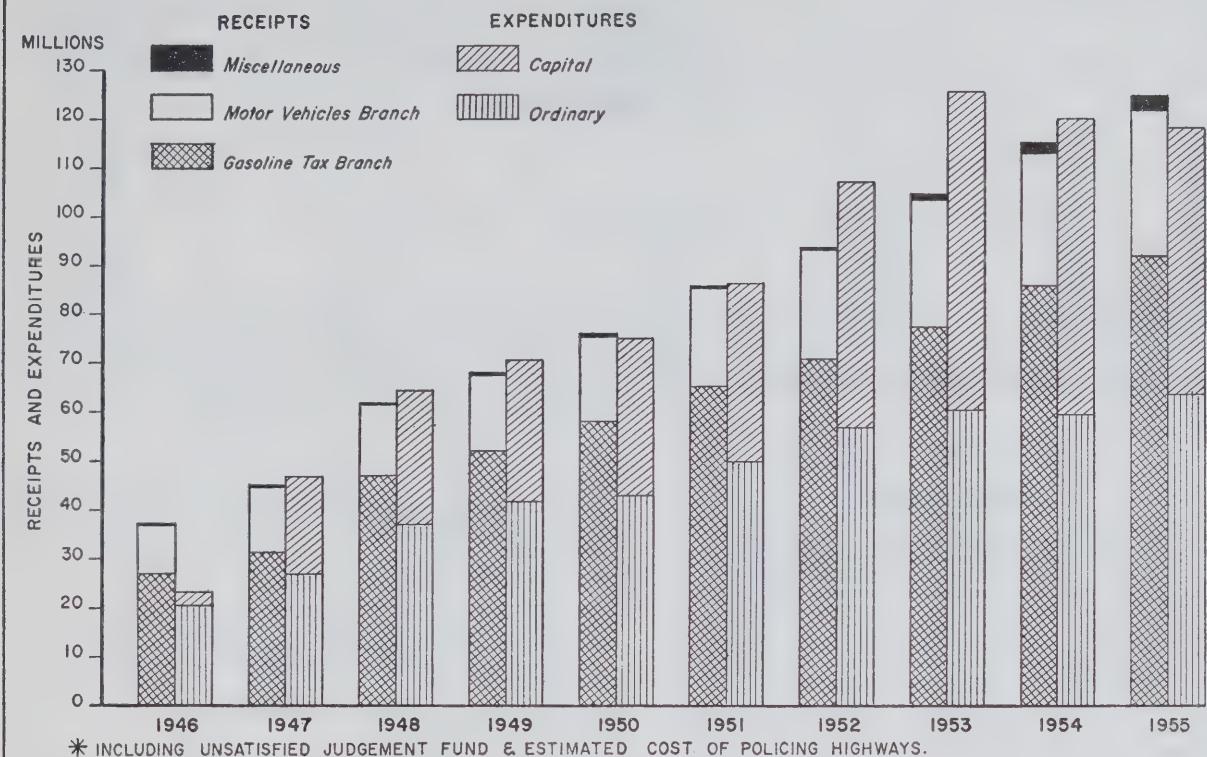
**Table 38—Present Backlog of Expenditures Required on Provincial Highways**

	(\$ million)
King's Highways (3,900 miles deficient. Cost: \$100,000 per mile).....	320
Secondary Roads (2,000 miles deficient. Cost: \$40,000 per mile).....	80
Highway 401.....	210
Improvement of Queen Elizabeth Way.....	50
Burlington Bridge.....	20
Hamilton By-Pass.....	30
Bridge Replacement (720 structures).....	150
Trans-Canada Highway (Provincial share).....	60
<b>Total Construction.....</b>	<b>920</b>

For the county and township roads, whose combined length exceeds 63,000 miles, or about one-quarter of the distance to the moon, studies of traffic densities and requirements are not yet far enough advanced to justify estimates. It has, however, been indicated that the present backlog of expenditure on county and township roads might approximate \$230 million. The comparable backlog of expenditure on urban streets is believed to be in excess of half a billion dollars. This makes a combined backlog of just under \$1 3/4 billion for all highways and roads. These figures must, of course, be regarded as preliminary and subject to revision.

It will naturally take some time to bring this work to a conclusion but, by the time it is completed, traffic will have increased still more, and further work and expenditures will be required.

**RECEIPTS & EXPENDITURES\* OF DEPT. OF HIGHWAYS, ONTARIO,**  
**FISCAL YEARS ENDED MARCH 31, 1946 - 1955**



### REVENUE

The ability of the Province to bear the cost of constructing and maintaining highways is naturally influenced by its receipts from motor traffic. Over the years, these receipts, which are derived almost entirely from the gasoline tax and motor vehicle licences and drivers' permits, have increased at much the same pace as provincial highway expenditures of all kinds. Since 1945-46, however, receipts have fallen short of expenditures in all but two years. Total expenditures have exceeded total receipts

over the 10-year period by more than \$26 million.

In the combined operations of the Province and the municipalities, the shortfall of highway revenue is much greater than that shown in the Provincial accounts alone, the municipalities having no revenue of their own from motor traffic other than minor sources such as fines, parking charges and, in some cases, carrier licences. Their chief access to highway revenues is through provincial subsidies, which rose from less than \$9.5 million in 1946 to \$44 million in 1955.

**Table 39—Highway Receipts and Expenditures of the Ontario Government,  
Fiscal Years ended March 31, 1946-1955**

Fiscal Year	Receipts	Expenditures	Less: Federal Government Repayments	Excess of Receipts over Expenditures	Excess of Expenditures over Receipts
(millions of dollars)					
1945-46	37.2	23.8	—	13.4	—
1946-47	45.0	47.0	—	—	2.0
1947-48	62.3	64.3	—	—	2.0
1948-49	68.3	70.7	—	—	2.4
1949-50	76.5	75.8	—	0.6	—
1950-51	86.3	89.4	2.7	—	0.4
1951-52	93.5	112.1	5.0	—	13.5
1952-53	104.2	129.4	4.1	—	21.1
1953-54	115.2	122.6	2.7	—	4.7
1954-55 (Est.)	125.0	125.0	6.0	6.0	—

Note: Cross additions may not agree, owing to rounding. Receipts include revenue from gasoline tax, licences, permits, etc., and the Unsatisfied Judgment Fee. Expenditures include subsidies to municipalities, the estimated cost of policing the highways and payments from the Unsatisfied Judgment Fund.

### FUTURE NEEDS

Providing the anticipated growth in population and motor vehicle registration materializes, the volume of motor traffic over the next 10 years, in terms of vehicle miles, is expected to double. With more and heavier vehicles, we must, therefore, expect substantial increases in capital expenditures for new highways and also for general main-

tenance. Altogether, expenditures for highways and municipal roads could approximate \$2½-\$3 billion over the next decade.

**Table 40—Projected Index of Future Growth of Motor Traffic, 1954-1970**

Year	(In terms of vehicle miles)
	Index
1954	100
1960	145
1965	193
1970	249

## Chapter 8

### CONCLUSION

We have endeavoured in this Submission to set out the economic progress of Ontario and the prospects for the future. We have outlined the basic position of agriculture, mining and forestry in our economy. We have shown that while about one-fifth of the net value of Ontario's manufacturing output results from the primary processing of products of the farm, mine and forests, there is a large and growing proportion of our industry engaged in the more advanced stages of manufacturing, such as farm implements, motor vehicles, aircraft, machinery, machine tools and electrical appliances and apparatus. In many of these branches, we have made such headway that we have not only supplanted by domestic manufacture products formerly imported, but have been able to develop an increasing volume of export trade. It is by continually expanding these secondary manufacturing stages that our best hope lies for achieving higher living standards.

To relegate Ontario to the role of a hewer of wood and a drawer of water is to ignore the advanced fabricating and processing industries that have already been established in this Province. It is true that we cannot share in some of the advantages which arise from the economies of the division of labour resulting from serving a mass domestic market, but we may make up for them by other means: by achieving higher levels of

technical skill, by greater enterprise and research and by so planning our communities as to reduce industrial costs. In this way, we can move forward towards a greater diversification and industrial balance that will make us less vulnerable to the vicissitudes of technical change and shifts in external demands.

The services of the Province and its municipalities, including Ontario Hydro, the Ontario Northland Railway and other Commissions and Boards, have made a most direct contribution to reducing production costs. A signal example of this is the development of a highway system that has made possible on a large scale the use of delivery trucks and great motor transport vans which save time and manpower. They give a flexibility to the scheduling of production and marketing, and their contribution to the lowering of production costs is incalculable. Indeed, through the speed and regularity with which such goods may be moved over the public highways from one factory to another and because of our abundance of electric power, low cost production and huge manufacturing plants are no longer necessarily synonymous. The flexibility which these elements have given to production permits a greater output of standardized products for a moderately-sized market at competitive costs, hitherto attained only in very large, highly mechanized plants.

However widespread this effect may be, there can be little doubt that the efficiency with which manufacturing in this Province is now—and in the future will be—conducted, will depend on the services rendered by the Province and municipalities.

In view of the growth ahead, a further expansion of these services is inevitable. The need for new schools is at present very great, and will continue so. The universities are faced with an enormous program and increased grants for their purposes are foreordained. The demand for highways and municipal thoroughfares must be met. Hospitals will require an increasingly large expenditure for their purposes, while the need for water and sewage disposal treatment plants is urgent. Sources of revenue to the Province and municipalities must, therefore, be sufficient to support the expansion of these services.

We have purposely avoided referring to Federal-Provincial fiscal relations, but the demands on the Province and its municipalities for public services and the necessity of assuring that Federal-Provincial fiscal arrangements do not put a drag on the economy can scarcely escape the attention of the Commission. The Commission's consideration of these matters is inseparable from its consideration of Canada's economic prospects. A high rate of population growth and economic expansion requires a favourable economic climate. Population does not grow, nor do industries operate and produce income, in a vacuum. Provincial and municipal services must be provided, and the taxation and other fiscal measures required to finance them should be such that they do not impede growth.

Because of the concentration of our industry and population, it costs us as a province a great deal of money to operate. There

are times, with the present distribution of tax revenues, when the Province is obliged to make a substantial outlay for services which earn a large federal revenue but yield a very small return to the Province. Often, we are faced with deciding on an expenditure to stimulate expansion and development, when in fact it does not pay us as a province to spend the money, owing to our small return from corporation and personal income taxes. This is not a satisfactory situation. It is one of the anomalies of our tax system that the Federal Government derives by far the larger proportion of tax revenue from our natural resource industries though these resources are vested in the Province, which is committed to very large expenditures for their conservation and development.

As we have seen, 50 per cent of Canada's manufacturing industry is located in Ontario. The Commission in its deliberations should not overlook the problems caused this Province by the location of industry, the means for dealing with which should properly come from corporation and personal income taxes. Industry produces revenues from these sources, but there are also penalties imposed, including the cost of provincial and municipal services in support of education, welfare, health, highways, water and sewerage. It is not sufficient merely to consider the amount of taxation arising from a province, but also the obligations that servicing this industry imposes.

Although great developments have taken place all across Canada, Ontario's proportion of Canada's population, labour force, manufacturing and tax payments has remained constant down through the years. As half the Federal Government's direct tax revenue comes from Ontario, it is the productive power, income and wealth of this Province that makes it possible for the Federal Gov-

ernment to finance its broad program, including the provision of fiscal need payments to the other provinces and the comprehensive array of social services that benefit the people in all parts of Canada. Our interests are devoted to promoting development and prosperity throughout the nation, but this objective should be sought by exploring new opportunities in the less prosperous regions and maintaining a sound system of fiscal need grants for provinces that genuinely need them. In the process, Ontario should not be placed in a financial straitjacket that forces it to adopt unsound taxation policies and prevents it from financing the services that its industry and people require.

Obviously, we cannot be content to stand still. Our living standards have increased by over 50 per cent in the last 16 years. Personal and family security have been strengthened. There is no reason why, in the next decade and a half, those achievements can not be surpassed. But if we are to do so, we will need to work out sound Federal-Provincial tax, and other fiscal, arrangements, enabling us to undertake the great public projects that will increase the efficiency and productivity of our workers and our industry. If we follow this course, those higher living standards can be achieved and the fruits of our progress made available in an ever-widening circle.



## **Part III — Appendices**

This part contains a number of special studies prepared by the Ontario Department of Economics, the Department of Agriculture, the Department of Mines, the Hydro-Electric Power Commission of Ontario and the Ontario Water Resources and Supply Committee. Grateful acknowledgment is also made to the Departments of Education, Lands and Forests, Highways, Public Works, Health, and Public Welfare and the Ontario Fuel Board for their unfailing co-operation. Except in certain special cases, we have not made detailed references to sources, but, in general, the statistics used have been drawn from the reports of the Dominion Bureau of Statistics, various Departments of the Government of Ontario and the Hydro-Electric Power Commission of Ontario.

The projections of population and of elementary, secondary and university enrolment are our own. Those of electric power requirements have been prepared by the Hydro-Electric Power Commission of Ontario. The projections on water and sewerage requirements were made by Mr. A. M. Snider, Chairman of the Ontario Water Resources and Supply Committee and Dr. A. E. Berry, Director, Sanitary Engineering Branch, Department of Health.

Forecasting is at best a hazardous occupation, as the introduction to Appendix I, Ontario's Population to 1975, makes plain. We have no illusions that these projections will turn out exactly as depicted here. However, such excursions into the future will not be wasted if they stimulate thinking, point the need for an even development of all our resources and suggest the directions in which action should be taken. If these studies achieve those objectives, they will have served their purpose well.



## APPENDIX I

### Ontario's Population to 1975

#### INTRODUCTION

Although the projections in this study represent our best judgment of the future population of Ontario based on all the evidence available to us at the present time, they should not be accepted without qualification. Population forecasting is always hazardous, and we are under no illusion that the projections set forth in this study will be borne out by events. Population growth is influenced by so many unpredictable factors—birth and death rates, immigration, emigration, interprovincial movements and changes in social patterns—that it is impossible to make predictions with any assurance that they will conform to reality. This does not render futile the intensive work required in a study of this kind. Despite its limitations, it may serve to suggest the shape of things ahead and the direction in which action must be taken.

Some idea of the future population growth is essential to any discussion of the development of Ontario's economy. The expectation of population growth is the basis for a multitude of decisions in both the private and public sectors of the economy. Population growth means more consumers and an increase in the size of the market. It also means a change in the number of people able and willing to work and this determines the amount of labour available to industry. Every industry, whether it be agriculture, mining, forestry, manufacturing or commercial services is affected by changes in our population. An increase in the number of families affects the demand for housing; more children spell a greater need for schools; an increase in the number of elderly people creates the need for more welfare institutions for the aged; a change in population exercises an important effect upon the number of motor vehicles on the highways. Thus, population growth and government expenditures

and the need for revenues are related. For these reasons, a projection of Ontario's population from the present to 1975 is presented in this study, along with an analysis of the population trends over the past quarter of a century. As more up-to-date information becomes available, our projections of Ontario's population will require modifications. Forecasting is not a once-for-all proposition; it is a continuous process of review and revision, and of bringing projections into line with reality.

On the basis of the assumptions which are set out in this study, Ontario's population, which on June 1, 1955, totalled 5,183,000, will reach 5,863,000 by 1960—an increase of 680,000, or 13 per cent. A further increase of 692,000, or 12 per cent, to 6,555,000 is expected between 1960 and 1965. Looking even farther ahead, we project that by 1975, Ontario's population will reach 8,184,000, some 3,000,000 or 58 per cent more than in 1955. This is a projected average increase of 2.9 per cent per year.

Very marked changes will take place in the composition of the population and these will have pronounced implications for many of our public services, such as elementary and secondary schools, universities, hospitals, highways, municipal thoroughfares, waterworks, sewers and sanitation treatment plants. Over the next twenty years, the number of children in the school age group will grow relatively faster than the rest of the population. Complex as the current problems of our educators may be, the future in this field is even more challenging. By 1965, the age group 5-19 will have grown by 644,000 and will then comprise 1,884,000 young people, as compared with 1,240,000 in 1955. A decade later, in 1975, this group will have attained a level of 2,351,000—467,000 more than in 1965 and no less than 1,111,000 more than in 1955.

We anticipate that the productive age group 20-64 will grow at a slower rate than the population

as a whole, and will comprise only 51.7 per cent of the population in 1965 and 51.2 per cent in 1975, as compared with 55.5 per cent in 1955. It may be that over the next twenty years a relatively smaller segment of the population than at present will be actively engaged in producing goods and services.

Continuing growth is forecast in the numbers of older people, although at a rate slightly below that for the population as a whole. By 1965, the age group 65 and over, which will then total 538,000, will show an increase of 23 per cent over its present total of 439,000. By 1975, the numbers of our senior citizens will rise to 661,000, a growth of 123,000 between 1965 and 1975.

Underlying the anticipated growth in population is the apparently increasing propensity of the population to reproduce itself. Fertility rates applicable to women in the more fertile age groups have shown a marked rise over the past few years. Of even greater significance is the seeming upward trend in the average size of families. Mortality rates —another important element in population growth—have been falling almost continuously since the turn of the century and are expected to decline even further.

Future immigration may not attain a level comparable with that of the immediate past. Nevertheless, we expect settlers in substantial numbers to be attracted to Ontario over the next two decades, giving further impetus to our population growth.

Our projections assume that the economic climate

will continue to be favourable to immigration and births. Past experience has shown that there is a close connection between high levels of prosperity and population growth.

## POPULATION TRENDS

In any study of this kind, certain assumptions as to future trends must of necessity be made. Some guidance in the choice of assumptions is to be found in an examination of past and current happenings. In the sections which follow, we have attempted to indicate some of the forces which have influenced the growth of our population over the past thirty years.

### Births

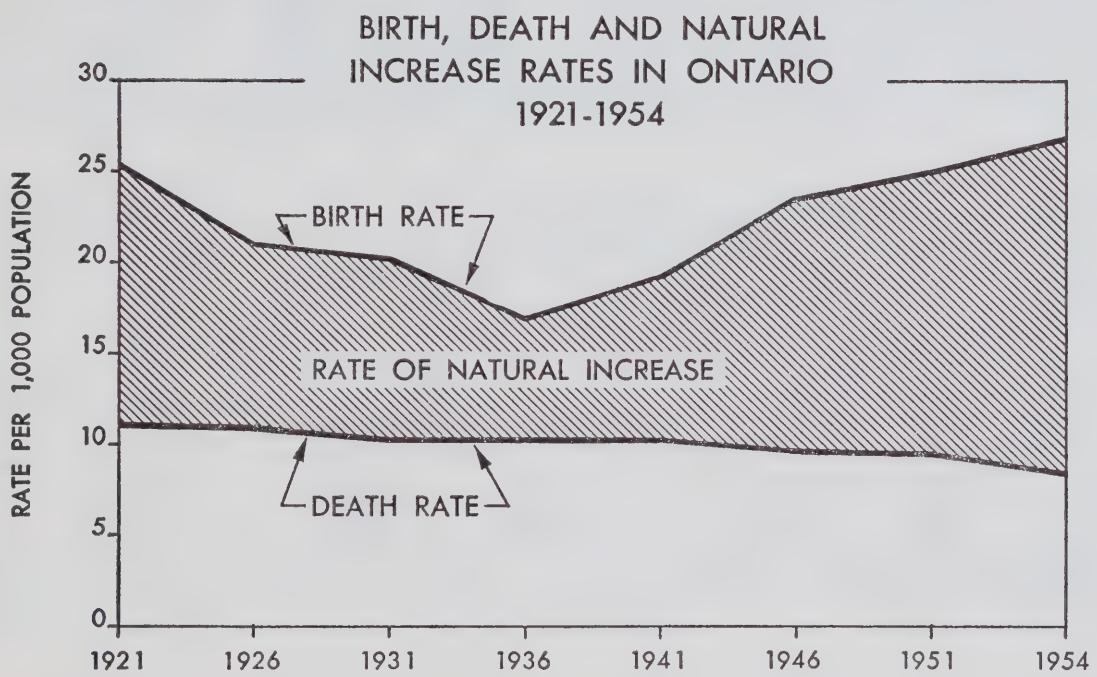
In 1921, 74,152 live births were registered in Ontario, representing a crude birth rate of 25.3 per thousand of the population. From that year until 1937, a steady decline in both birth rates and the number of births recorded took place. By 1937, the number of live births had fallen to a level of 61,645, while the crude birth rate had reached a low of 16.9 per thousand. After 1937, the trend was reversed and, ten years later in 1947, births attained a then all-time high level of 108,853. After a slight easing in the following three years, the upward trend was again resumed. Preliminary estimates indicate a total of over 140,000 in 1955.

**Table A1—Births (Exclusive of Stillbirths) Registered in Ontario, 1921-1954**

Year	Births (Exclusive of Stillbirths)	Rate per 1,000 of Population	Year	Births (Exclusive of Stillbirths)	Rate per 1,000 of Population
1921	74,152	25.3	1938	65,564	17.9
1922	71,430	24.0	1939	64,123	17.3
1923	70,056	23.3	1940	68,524	18.3
1924	71,510	23.4	1941	72,262	19.1
1925	70,122	22.5	1942	78,192	20.1
1926	67,617	21.4	1943	81,173	20.7
1927	67,671	21.0	1944	78,090	19.7
1928	68,510	20.9	1945	78,974	19.7
1929	68,458	20.5	1946	97,446	23.8
1930	71,263	21.0	1947	108,853	26.1
1931	69,209	20.2	1948	104,195	24.4
1932	66,842	19.2	1949	106,601	24.3
1933	63,646	18.1	1950	108,708	24.3
1934	62,934	17.6	1951	114,827	25.0
1935	63,069	17.6	1952	123,891	26.0
1936	62,451	17.3	1953	129,771	26.5
1937	61,645	16.9	1954 (prel.)	136,261	27.0

# ONTARIO VITAL STATISTICS 1921-1954

Year	Population (June 1)	Births	Birth Rate per 1000 Population	Deaths	Death Rate per 1000 Population	Natural Increase	Natural Increase Rate per 1000 Population
1921	2,934,000	74,152	25.3	34,551	11.8	39,601	13.5
1922	2,980,000	71,430	24.0	34,034	11.4	37,396	12.6
1923	3,013,000	70,056	23.3	35,636	11.8	34,420	11.5
1924	3,059,000	71,510	23.4	33,078	10.8	38,432	12.6
1925	3,111,000	70,122	22.5	33,960	10.9	36,162	11.6
1926	3,164,000	67,617	21.4	35,909	11.3	31,708	10.1
1927	3,219,000	67,671	21.0	34,775	10.8	32,896	10.2
1928	3,278,000	68,510	20.9	37,128	11.3	31,382	9.6
1929	3,334,000	68,458	20.5	38,123	11.4	30,335	9.1
1930	3,386,000	71,263	21.0	37,313	11.0	33,950	10.0
1931	3,431,683	69,209	20.2	35,705	10.4	33,504	9.8
1932	3,473,000	66,842	19.2	36,469	10.5	30,373	8.7
1933	3,512,000	63,646	18.1	35,301	10.1	28,345	8.0
1934	3,544,000	62,234	17.6	35,119	9.9	27,115	7.7
1935	3,575,000	63,069	17.6	36,317	10.2	26,752	7.4
1936	3,606,000	62,451	17.3	37,571	10.4	24,880	6.9
1937	3,637,000	61,645	16.9	38,475	10.6	23,170	6.3
1938	3,672,000	65,564	17.9	36,890	10.0	28,674	7.9
1939	3,708,000	64,123	17.3	37,530	10.1	26,593	7.2
1940	3,747,000	68,524	18.3	38,503	10.3	30,021	8.0
1941	3,787,655	72,262	19.1	39,226	10.4	33,036	8.7
1942	3,884,000	78,192	20.1	39,119	10.1	39,073	10.1
1943	3,915,000	81,173	20.7	41,063	10.5	40,110	10.2
1944	3,963,000	78,090	19.7	39,781	10.0	38,309	9.7
1945	4,000,000	78,974	19.7	39,499	9.9	39,475	9.9
1946	4,093,000	97,446	23.8	39,758	9.7	57,688	14.1
1947	4,176,000	108,853	26.1	41,619	10.0	67,234	16.1
1948	4,275,000	104,195	24.4	42,364	9.9	61,831	14.5
1949	4,378,000	106,601	24.3	43,379	9.9	63,222	14.4
1950	4,471,000	108,708	24.3	43,948	9.8	64,760	14.5
1951	4,597,542	114,827	25.0	43,981	9.6	70,846	15.4
1952	4,766,000	123,891	26.0	44,402	9.3	79,489	16.7
1953	4,897,000	129,771	26.5	45,242	9.2	84,529	17.3
1954	5,046,000	136,261	27.0	44,515	8.8	91,746	18.2



While no positive proof of association has been established between the levels of economic activity and birth rates, it would appear to be more than coincidental that the birth rate has declined in times of economic recession and has risen as economic conditions have improved. These trends are evident in Ontario's experience. The fall in birth

The rise in birth rates is in part a reflection of the spectacular increase in the number of marriages which in the last decade have been about double those in the middle 1930's. In turn, both these trends are partly a consequence of the marked tendency towards earlier marriages which has been experienced, especially in the last decade. The fact

**Table A2—Number of Marriages Recorded In Ontario, 1921-1954**

Year	No. of Marriages	Rate per 1,000 of Population	Year	No. of Marriages	Rate per 1,000 of Population
1921	24,871	8.5	1938	30,080	8.2
1922	23,360	7.8	1939	34,657	9.3
1923	24,842	8.2	1940	41,229	11.0
1924	24,038	7.9	1941	43,270	11.4
1925	23,074	7.4	1942	45,466	11.7
1926	23,632	7.5	1943	36,109	9.2
1927	24,677	7.7	1944	31,927	7.9
1928	25,728	7.8	1945	34,137	8.5
1929	27,605	8.3	1946	46,073	11.3
1930	25,605	7.6	1947	44,056	10.5
1931	23,771	6.9	1948	43,242	10.1
1932	22,924	6.4	1949	43,304	9.9
1933	22,587	6.4	1950	43,744	9.8
1934	25,874	7.3	1951	45,198	9.8
1935	26,843	7.5	1952	45,251	9.5
1936	27,734	7.7	1953	45,954	9.4
1937	29,893	8.2	1954 (prel.)	45,028	8.9

rates recorded during most of the 1930's occurred in relatively depressed times. As the tempo of the economy of the Province began to accelerate in the 1940's, the birth rate rose. In 1954, it was at the highest level in the statistical history of the Province, which goes back over a half century.

is that far more marriages are now taking place among the younger and more fertile age groups. For example, in 1921, 71.6 per cent of females in the 25-34 age group and 39.7 per cent of those in the 20-24 age group were married, whereas by 1951, these percentages had risen to 83.9 and 57.2 respectively. The trend is similar for males.

**Table A3—Percentages of Married Males and Females in Selected Age Groups, Ontario, Census Years 1921-1951<sup>1</sup>**

Year	Age Group					
	15-19 % Married		20-24 % Married		25-34 % Married	
	Males	Females	Males	Females	Males	Females
1921	0.72	6.09	19.60	39.69	62.12	71.63
1931	0.45	5.60	16.54	37.51	61.00	72.46
1941	0.64	6.87	19.43	42.72	62.56	72.74
1951	1.63	10.29	31.09	57.21	74.55	83.91

(1) Exclusive of those widowed and divorced.

The trend towards earlier marriage since 1939 has been more marked in the case of males than in the case of females. This may reflect, in part, the improvement that has taken place since that date in employment opportunities and economic conditions. Traditionally, women marry at earlier ages than men, but even here the trend follows a consistent pattern.

As a result of the greater concentration of marriages in the younger age groups, the percentage of marriages occurring in other age groups since 1939 has, in general, been declining. An exception to this, however, has been the apparent increase in the number of marriages of persons 40 years of age and

groups from 15 to 35, births per 1,000 women were in 1954 at the highest level in a quarter of a century. The upward trend has been very striking since the end of World War II. The decline in fertility among older women has been more than offset by the higher fertility prevailing among younger women. Children born to women in these older child-bearing age groups account for fewer than 15 per cent of all births.

The increased fertility among women in the most productive child-bearing age groups has been ascribed to various causes. Leaving aside the important consideration of the effect of continuing prosperity, it may well be that the delay in family

**Table A4—Births Per 1,000 Women in the Child-Bearing Age Groups, Ontario,  
Selected Years 1921-1954**

Year	Age Group						
	15-19	20-24	25-29	30-34	35-39	40-44	45-49
1921	35.4	150.3	173.4	143.0	98.2	38.8	5.1
1931	35.7	127.5	145.2	114.9	74.1	28.8	3.4
1941	36.8	133.3	137.3	96.3	55.9	19.1	1.7
1946	40.4	166.9	169.7	123.2	70.0	21.7	2.1
1947	48.9	192.0	190.2	128.9	71.2	22.6	1.8
1948	50.7	179.5	180.1	118.8	67.0	21.4	1.8
1949	52.6	178.0	182.3	118.1	68.3	21.0	1.8
1950	55.1	176.8	179.7	120.6	67.8	20.4	1.8
1951	60.1	186.4	181.8	125.2	68.1	21.0	1.9
1952	63.3	202.2	189.5	134.2	69.1	21.1	1.6
1953	62.5	211.4	196.0	140.8	71.0	21.5	1.6
1954 (prel.)	66.7	222.2	200.9	147.1	71.0	23.2	1.9

over. There is reason to believe that remarriage has had some bearing on this.

It is reasonable to assume that the growing percentage of married women in the younger age groups, plus the trend towards earlier marriage, have had some bearing on the increased fertility noted among younger women. In 1921, for example, the number of births per 1,000 women in the 15-19 age group was 35.4; by 1954, it had climbed to 66.7 per 1,000. A similar trend was observed for women in the 20-24, 25-29 and, to a lesser extent, 30-34 age groups. In contrast, fertility among women in older child-bearing age groups declined.

The picture which unfolds is that in the age

formation occasioned by family separations during the Second World War exerted some influence on the high birth rates recorded in the post-war era. A sufficient period has, however, now elapsed, to render this factor relatively unimportant. The increase in the numbers of younger married women and the trend to earlier marriage have accelerated family formation. This could mean that part of the present high level of births is being "borrowed against the future." There is, however, evidence that the average size of families in Ontario is in fact increasing, which will have an offsetting effect. The table which follows shows live births in Ontario by birth order 1931-1954, expressed as percentages of total births.

**Table A5—Live Births in Ontario, by Birth Order, Selected Years, 1931-1954,  
Expressed as Percentage of Total Births**

Births	1931	1936	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
1st	28.4	30.9	33.7	35.7	37.8	38.6	37.4	34.2	33.5	37.0	39.3	34.7	31.5	30.5	30.4	32.2	31.3	30.8
2nd	22.2	22.3	23.9	24.6	24.6	25.2	26.0	27.0	27.4	27.6	27.1	28.9	30.0	29.6	29.0	27.0	27.2	26.6
3rd	15.0	14.8	14.6	14.2	13.7	13.6	14.2	15.3	15.5	15.0	14.8	16.0	17.4	17.9	18.3	18.3	18.3	18.6
4th	10.5	9.9	8.9	8.4	8.1	7.8	8.0	8.6	8.5	7.9	7.5	8.4	8.7	9.2	9.7	10.1	10.2	10.5
5th	7.2	6.4	5.9	5.3	5.0	4.7	4.7	4.9	5.1	4.5	4.2	4.3	4.7	4.9	5.0	5.1	5.4	5.7
6th	5.1	4.6	4.0	3.7	3.3	3.2	3.0	3.2	3.2	2.7	2.4	2.7	2.7	2.9	2.8	2.8	3.0	3.1
7th	3.6	3.5	2.7	2.5	2.3	2.2	2.1	2.2	2.1	1.7	1.6	1.6	1.7	1.7	1.7	1.6	1.7	1.8
8th	2.6	2.3	2.0	1.7	1.6	1.5	1.4	1.5	1.5	1.2	1.0	1.2	1.1	1.1	1.1	1.1	1.0	1.1
9th	1.8	1.7	1.4	1.2	1.2	1.0	1.0	1.0	1.0	0.8	0.8	0.7	0.8	0.8	0.7	0.6	0.7	0.7
10th	1.2	1.2	0.9	1.0	0.8	0.8	0.7	0.7	0.7	0.6	0.5	0.5	0.6	0.5	0.4	0.5	0.4	0.5
10th & Unstated	2.5	2.5	2.0	1.8	1.7	1.5	1.6	1.5	1.5	1.0	1.0	1.1	1.0	0.9	0.9	0.8	0.8	0.8
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Two distinct trends in the average size of families are discernible. Since 1931, the decline in the percentage of children of high birth order suggests that the number of large families in Ontario, of the order of seven and over, is decreasing. The percentages of seventh and eighth births to total births have halved over the period 1931 to 1954, while the percentage of children of higher birth order has shown an even more drastic reduction. In absolute terms, despite an almost 100 per cent increase in total births, fewer seventh and eighth children were born in Ontario in 1954 than in 1931. This is in part the character of the decline in fertility among women in the older child-bearing age groups.

On the other hand, the number of families of a more moderate size would appear to be on the increase. Greater percentages of third and fourth births to total births were recorded in Ontario in 1954 than at any time since and including 1931, and the present trend in these categories appears to be upward. While fifth births have not yet attained the high ratio of 1931, they were proportionately greater in 1954 than in any year since 1939 and appear to be rising. The percentage of sixth births to total births has been moving slowly upwards since 1947.

In absolute terms, the number of third births recorded in the Province in 1954 (25,300) was almost two and one half times as great as in 1931 (10,800), while the number of fourth births almost doubled (from 7,400 to 14,300). The number of first, second, third, fourth, and probably even fifth births recorded in Ontario in 1954 set all-time high records. In this connection, the number of women in the

child-bearing age groups in that year was also at a very high level.

Summing up, it would appear that the average size of the larger family, which in the past would have comprised seven or more children, has been declining. More than offsetting this has been the trend for the average size of smaller families to increase substantially as compared with twenty years ago. The net result of these two changes has been a rise in the average number of children per family.

## Deaths

The general mortality rate in Ontario declined from 11.8 per thousand of the population in 1921 to 8.8 per thousand in 1954. Rates for each age group have been falling, with the most spectacular declines occurring in the under five age group. Reductions in death rates have been much more pronounced in the case of females than of males. For males, death rates in age groups up to age 50 have, in general, been falling, but little or no improvement has taken place since 1921 in the rates for older males. Death rates for females, on the other hand, have been falling at all ages. A comparison of mortality rates by sex reveals that those applicable to females at ages 45 and over are, in general, more than 50 per cent lower than those for males in the same groups. Women are not only now living longer than men, but the differential is increasing. The position in this regard is illustrated in Table A6.

**Table A6—Death Rates for Ontario, per 1,000 Males and per 1,000 Females,  
in Age Groups 45 and Over, Selected Years, 1921-1954**

Year	45-49		50-54		55-59		60-64		65-69		70-74		75-79	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F
1921	7.0	7.5	10.5	10.3	16.0	13.9	23.3	20.9	34.4	34.7	61.2	56.9	93.9	88.8
1931	7.8	6.4	11.2	8.7	16.8	13.3	23.7	20.4	38.1	30.3	56.2	48.5	95.0	88.3
1941	7.1	5.6	11.6	7.7	16.6	12.2	26.1	18.0	38.4	30.0	59.6	47.1	97.9	79.9
1951	6.5	4.3	10.6	5.8	17.6	10.1	26.1	16.2	37.0	25.3	55.6	40.9	91.9	72.9
1954	5.5	3.9	10.3	5.7	16.2	8.9	25.7	15.0	36.6	22.7	56.1	39.3	83.6	64.4

**Table A7—  
Death Rates Per 1000 Population in Ontario,  
Both Sexes, by Five Year Age Groups,  
1921, 1931, 1941, 1951 and 1954**

Age Groups	1921	1931	1941	1951	1954
Under 5	28.3	19.1	13.1	8.0	6.9
5- 9	3.0	1.5	1.1	0.7	0.7
10-14	1.9	1.3	1.0	0.6	0.5
15-19	2.7	1.9	1.3	1.0	0.8
20-24	3.6	2.9	1.9	1.2	1.0
25-29	4.3	3.3	2.0	1.2	1.2
30-34	4.3	3.5	2.2	1.5	1.5
35-39	5.2	4.2	3.2	2.1	1.8
40-44	6.1	5.0	4.3	3.4	3.2
45-49	7.3	7.1	6.3	5.4	4.7
50-54	10.4	10.0	9.7	8.2	8.0
55-59	15.0	15.1	14.5	13.9	12.6
60-64	22.1	22.1	22.0	21.2	20.2
65-69	34.5	34.2	34.2	31.1	29.5
70-74	59.1	52.3	53.1	47.9	47.4
75-79	91.3	90.6	88.3	81.8	73.2
80-84	136.0	137.2	139.5	127.2	116.8
85+	241.5	235.2	240.8	223.4	228.9

In 1921, the average age at death in Ontario was 42.2 years for males and 45.6 years for females. By 1954, these averages were as high as 60.2 years for males and 64.2 years for females. While this is not the best yardstick of the improvements in mortality rates since that time, it gives some idea of the advances that have taken place in medical science, public health and nutritional habits. These figures have also been influenced by the decline in infant mortality.

In 1921, an average of 91 children out of every 1,000 live births in Ontario died before reaching the age of one year. This rate, which has been falling constantly, was down to 26 per 1,000 in 1954 —less than one-third of the 1921 rate. Since 1949, the rate has dropped by 30 per cent. If the 1921 risk of mortality were applied to the children born

in 1954, 12,400 would have died instead of the 3,500 children who actually died in that year. Deaths among newly born children are most numerous in the first month of life, although in this category, too, the mortality rate has been drastically reduced. Deaths among male infants have been at a consistently higher level than among females. Although by the end of the first year of life a greater proportion of female children have survived, births of male children have consistently exceeded those of female children by the order of 106 to 100. Higher mortality rates tend to level off the excess of the male births. Despite the reductions in infant mortality, more deaths occur in the first year of life than in any other single year.

The general improvements in medical techniques, pre- and post-natal care, sanitation and health measures in general, have made valuable contributions toward reductions of infant mortality rates. A rapid increase in the numbers of births taking place in hospitals in the Province may also have been an important factor. In 1931, only 38 per cent of live births in Ontario were hospitalized; by 1954, the percentage had risen to 96.

The risks of child-bearing have been drastically reduced since 1921. In that year, the maternal mortality rate in Ontario was at a level of 5.2 per thousand live births. By 1954, this rate had been decimated, dropping as low as 0.5 per thousand. Although the number of live births over the period almost doubled from 74,152 to 136,261, only 69 mothers lost their lives in childbirth in 1954, as compared with 387 in 1921.

Great changes have also taken place in the relative importance of the principal causes of death. In 1921, more people died from pneumonia, bronchitis and influenza than from any other cause. The death rate per hundred thousand of the population from this type of disease in 1921 was 137.2; in 1954, it had reached an all time low level of 34.8

per hundred thousand of the population, less than one-quarter of the rate prevailing in 1921. The death rate from tuberculosis has been cut from 71.0 per hundred thousand in 1921 to 6.1 in 1954, while deaths resulting from diphtheria have been almost eliminated. In 1953 and 1954, no deaths were recorded in Ontario from this disease, as compared with 653 in 1921.

Diseases of the heart and all forms of cancer have ranked consistently high among the principal causes of death. In 1921, they ranked second and third respectively behind the group comprising pneumonia, bronchitis and influenza; by 1954, they had moved into first and second positions respectively. The death rate from diseases of the heart has almost tripled from 115.7 per hundred thousand of the population in 1921 to 331.7 in 1954, while that for cancer has risen over the same period from 90.1 to 139.3.

The rising death rates for diseases of the heart and cancer should be put into proper perspective, however. Certain causes of death that mainly affect the younger age groups have declined, e.g., diphtheria and tuberculosis, and we have already noted that people are living longer than formerly. This has resulted in a larger proportion of the population surviving to those older ages where there is increased liability to contract heart diseases and afflictions of the cancer type. Again, diagnostic techniques have improved and it may well be that, in some instances in the past, the primary cause of death has been incorrectly attributed to factors other than diseases of the heart or cancer. Changing methods of reporting causes of death may also have caused some current statistics to compare unfavourably with those in the past. Despite these qualifications, there is no doubt that the incidence of both heart disease and cancer has risen rapidly, especially in the older age groups.

**Table A8—Mortality Rates for Selected Causes, in Ontario, 1921-1954**

Year	Deaths in Ontario	Death Rate Per 1,000 of Population	Infant Mortality Rates Per 1,000 Live Births	Maternal Mortality Rates Per 1,000 Live Births	Average Age of Decedents	Average Age of Decedents
1921	34,551	11.8	91	5.2	42.2	45.6
1922	34,034	11.4	83	5.2	44.9	47.7
1923	35,636	11.8	85	5.3	45.9	48.8
1924	33,078	10.8	76	5.8	46.6	49.0
1925	33,960	10.9	79	5.5	47.2	49.3
1926	35,909	11.3	78	5.6	48.5	50.8
1927	34,775	10.8	71	6.0	49.0	51.0
1928	37,128	11.3	71	5.8	49.6	51.8
1929	38,123	11.4	76	5.4	49.0	51.3
1930	37,313	11.0	74	6.2	48.8	51.4
1931	35,705	10.4	70	5.4	50.1	52.6
1932	36,469	10.5	62	5.1	52.3	55.1
1933	35,301	10.1	60	5.4	53.4	55.9
1934	35,119	9.9	57	5.6	54.4	56.7
1935	36,317	10.2	56	5.0	54.5	57.1
1936	37,571	10.4	55	5.7	55.6	57.8
1937	38,475	10.6	55	5.2	55.5	58.0
1938	36,890	10.0	49	3.8	56.1	58.8
1939	37,530	10.1	46	4.3	57.5	60.6
1940	38,503	10.3	43	3.7	57.9	60.9
1941	39,226	10.4	46	3.0	57.4	60.7
1942	39,119	10.1	40	2.6	57.9	61.1
1943	41,063	10.5	42	2.3	58.3	61.6
1944	39,781	10.0	43	2.5	58.1	61.3
1945	39,499	9.9	41	2.2	58.6	61.6
1946	39,758	9.7	37	1.6	57.9	61.2
1947	41,619	10.0	36	1.2	58.1	61.7
1948	42,364	9.9	35	1.2	58.9	62.4
1949	43,379	9.9	37	1.3	58.9	62.3
1950	43,948	9.8	35	0.9	59.5	63.5
1951	43,981	9.6	31	0.8	59.7	63.7
1952	44,402	9.3	31	0.8	59.3	63.4
1953	45,242	9.2	28	0.5	59.6	63.8
1954 (Prel.)	44,515	8.8	26	0.5	60.2	64.2

In view of the continuing decline in mortality rates, life tables presently in use—constructed on the basis of current death rates—would appear to be inadequate in making a population forecast for the next two decades. Their use would imply that no further improvements will take place in medical science, public health measures, etc. We have attempted, in our forecast, to project into the future the trends in death rates apparent since 1921. In the case of infant mortality, for example, we have assumed that by 1972 the rate will have fallen from its 1954 level of 26 per thousand live births to a low of 18. Nor do we consider this to be overly ambitious. In 1952, the infant mortality rate for Sweden was as low as 20 per thousand and for New Zealand, 22. While it is not known how reliable or how accurate these statistics may be, the trend in infant mortality is clear. Similar assumptions were made, where appropriate, for other age groups.

## Immigration

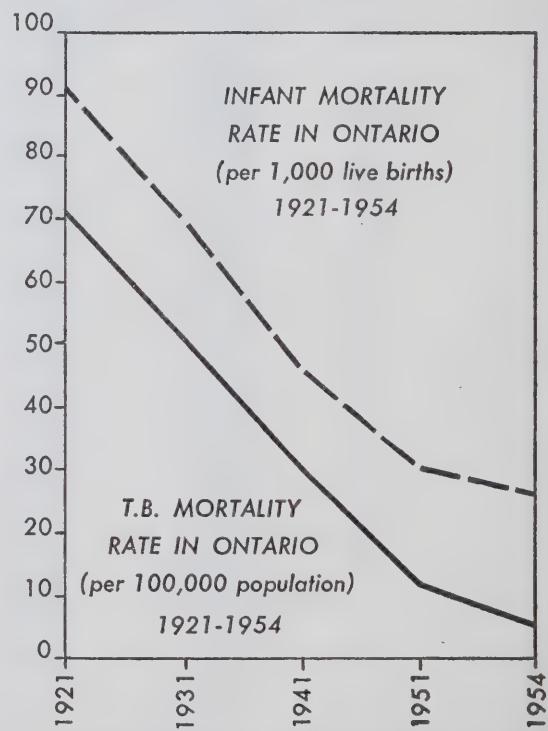
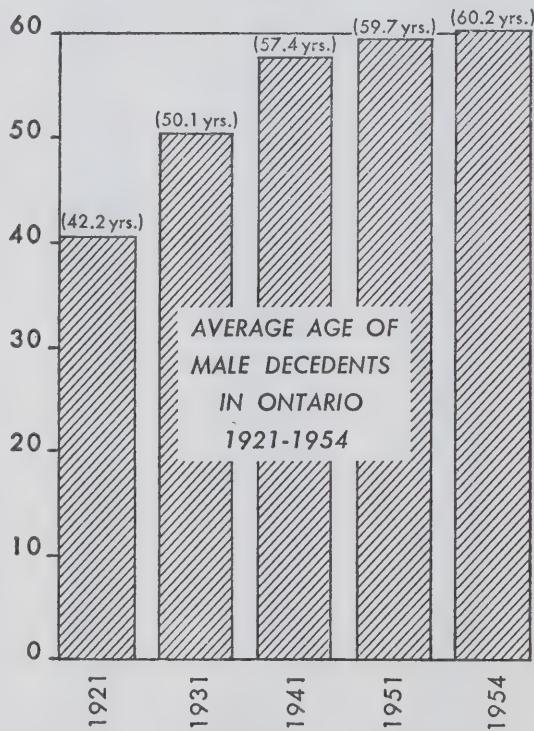
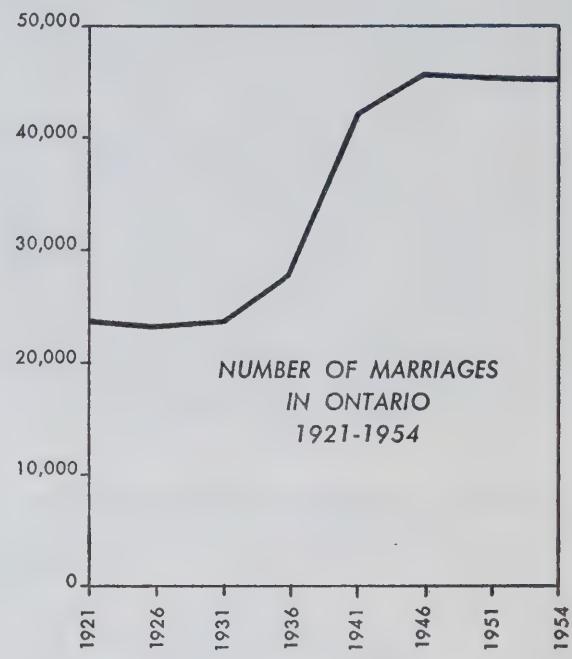
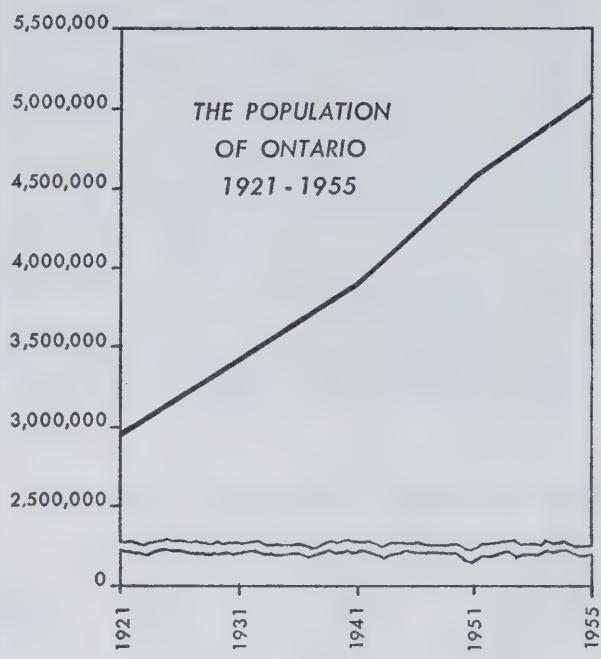
Immigration is one of the most variable and unpredictable elements in population growth. Immigration to Canada from the turn of the century to the outbreak of World War I was at a very high level, reaching a peak in 1913 when 383,000 newcomers entered the country. Immigrant arrivals declined sharply during the war years and then rose to an average of about 120,000 a year in the 1920's. In the 1930's average annual immigration dropped to about 16,000, and during World War II it declined even further. Between 1946 and 1954, however, large scale immigration was resumed; more than one million immigrants entered the country during that period at an average annual rate exceeding 120,000.

Like marriages and births, the rate of immigration has generally been highest when Canadian economic activity has been vigorous.

**Table A8—Mortality Rates for Selected Causes, in Ontario, 1921-1954—Continued**

Year	Death Rates Per 100,000 of Population from Specified Causes					
	Tuberculosis	Diphtheria	Pneumonia Bronchitis and Influenza	Motor Vehicle Accidents	Cancer All Forms	Diseases of the Heart
1921	71.0	22.3	137.2	3.7	90.1	115.7
1922	66.4	13.8	152.4	3.5	90.0	126.1
1923	66.0	10.5	185.0	6.9	92.7	145.1
1924	59.6	10.5	102.0	6.7	98.5	137.0
1925	59.2	8.1	117.7	8.2	97.3	141.9
1926	58.0	7.2	147.0	7.6	101.4	162.2
1927	55.9	9.2	110.0	12.0	101.7	164.5
1928	55.9	6.5	140.2	13.3	107.8	171.1
1929	51.1	7.9	147.5	16.7	105.6	176.7
1930	52.9	6.0	96.3	15.3	110.3	166.4
1931	50.4	4.6	102.6	16.7	111.3	169.5
1932	46.2	2.6	116.5	14.3	113.5	192.3
1933	41.7	1.1	100.7	11.8	118.8	188.5
1934	37.7	0.6	80.3	14.9	117.9	199.4
1935	36.4	0.9	97.2	16.0	121.9	197.3
1936	36.8	0.9	92.5	15.6	127.6	195.6
1937	36.2	0.8	119.3	21.3	129.8	198.7
1938	33.7	0.3	87.2	18.4	126.0	200.3
1939	29.3	0.4	93.0	18.4	127.5	207.8
1940	26.9	0.4	71.8	20.2	134.5	228.1
1941	29.0	0.4	59.7	22.0	136.3	308.2
1942	28.6	0.4	56.1	15.7	134.1	310.7
1943	28.1	0.2	73.9	14.4	138.1	324.3
1944	26.9	0.5	56.9	13.4	138.6	312.9
1945	25.3	0.8	50.7	15.4	138.3	316.7
1946	25.7	1.1	50.3	17.4	138.3	309.0
1947	24.9	0.5	49.4	17.5	143.5	329.1
1948	19.3	0.2	50.5	17.6	145.2	334.3
1949	15.7	0.1	49.2	19.3	144.9	337.7
1950	13.1	0.1	45.3	18.3	141.3	359.5
1951	12.5	0.04	49.7	20.3	139.7	347.5
1952	8.4	0.1	35.4	21.1	139.1	347.3
1953	6.4	—	41.8	21.5	138.5	345.7
1954 (Prel.)	6.1	—	34.8	21.0	139.3	331.7

# ONTARIO VITAL STATISTICS 1921-1954



**Table A9—Immigrant Arrivals in Canada and Those Giving Ontario as Their Province of Destination, 1901-1954**

Year	Canada	Ontario	Ontario as % of Canada	Year	Canada	Ontario	Ontario as % of Canada
1901	49,149	6,208	12.6	1928	166,783	44,989	27.0
1902	67,379	9,798	14.5	1929	164,993	61,684	37.4
1903	128,364	14,854	11.6	1930	104,806	37,851	36.1
1904	125,899	21,129	16.8	1931	27,530	12,316	44.7
1905	142,653	35,687	25.0	1932	20,591	9,312	45.9
1906	184,064	52,212	28.4	1933	14,382	6,210	43.9
1907	122,165	32,593	26.7	1934	12,476	5,582	44.7
1908	257,309	75,067	29.2	1935	11,277	4,786	42.4
1909	141,370	29,102	20.6	1936	11,643	4,913	42.2
1910	196,044	43,998	22.4	1937	15,101	6,463	42.8
1911	294,157	76,550	26.0	1938	17,244	7,107	41.2
1912	334,853	96,938	28.9	1939	16,994	5,957	35.1
1913	382,841	119,178	31.1	1940	11,324	4,447	39.3
1914	367,240	120,497	32.8	1941	9,329	3,365	36.1
1915	126,778	42,046	33.2	1942	7,576	3,315	43.8
1916	37,453	12,582	33.6	1943	8,504	3,852	45.3
1917	65,128	23,541	36.1	1944	12,801	5,361	41.9
1918	65,945	20,889	31.7	1945	22,722	9,342	41.1
1919	48,942	11,834	24.2	1946	71,719	29,604	41.3
1920	108,408	36,873	34.0	1947	64,197	35,543	55.4
1921	91,728	35,538	38.7	1948	125,414	61,621	49.1
1922	64,224	26,443	41.2	1949	95,217	48,607	51.0
1923	133,729	59,944	44.8	1950	73,912	39,041	52.8
1924	124,164	52,069	41.9	1951	194,391	104,842	53.9
1925	84,907	28,113	33.1	1952	164,498	86,059	52.3
1926	135,982	38,968	28.7	1953	168,868	90,120	53.4
1927	158,886	45,847	28.9	1954	154,227	83,029	53.8

Note: Figures for both Canada and Ontario are on a fiscal year basis for the period 1901-1920, and on a calendar year basis thereafter.

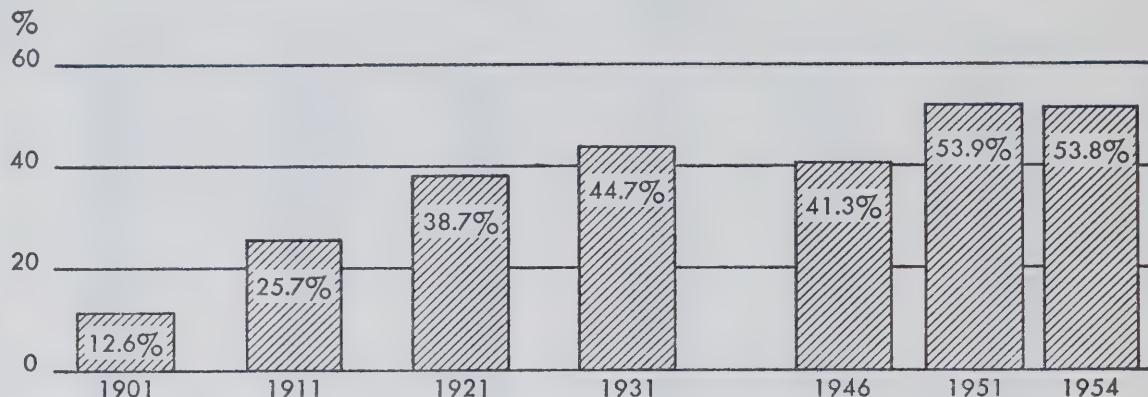
The foregoing table requires qualification, for, while it shows the very heavy flow of immigrants into Canada and Ontario in the decade before World War I, it fails to differentiate between the nature of that immigration and the inflow we have experienced in the decade from 1946 to 1955. A large proportion of the influx in the earlier period used Canada as a stepping stone for migration to the United States. This has not been a characteristic of the immigration following World War II when most of the immigrants accepted Canada as their permanent residence.

Many of the immigrants who came to Canada before 1914 and remained in this country settled in the Prairie Provinces, as indeed did many people who were native to Ontario. Now, as a result of the changing complexion of the Canadian economy, an increasing proportion of the total number of immigrants are settling in Ontario. Indeed, in the last six years, more than half of all immigrants

to Canada have given Ontario as their destination. Whereas a majority of the immigrants in the early decades of this century were destined for the land, in 1953 only about 18 per cent planned to go into agriculture. Here in Ontario, with its development and increased industrial diversification, immigrants in a wide field of trades and professions find a friendly environment and a greater number of outlets for their talents and skills than they do in all other provinces.

In the future, the capacity of both Canada and Ontario to absorb immigrants will depend upon our rate of economic development. We have assumed in our population projections that conditions will continue to be favourable. We recognize that the ideal conditions for maintaining our current high level of immigration require not only a stable high level of economic activity, but an expanding economy in which the annual rate of economic growth is in fact increasing.

**PERCENTAGE OF IMMIGRANTS TO CANADA GIVING ONTARIO AS DESTINATION, 1901, 1911, 1921, 1931, 1946, 1951, 1954**



With economic conditions improving in Europe—our principal recruiting area—it is possible that fewer suitable immigrants will be forthcoming in the future. In the years immediately following 1946, economic activity in Europe was at a low ebb and living standards were relatively poor. In addition, great social and political changes were taking place. In these circumstances, many Europeans looked to Canada for a new and better life. But such conditions have undergone radical changes in the past few years. Britain and West Germany, for example, are currently experiencing a period of relative prosperity and this is also true of much of the rest of free Europe. These changes are reflected, in part, in falling Canadian immigration figures for recent months. The conditions which prompted much of the emigration from Europe in recent years are unlikely to recur to the same degree in the foreseeable future. It would, however, be reasonable to assume that economic expansion in both Canada and Ontario will continue to attract substantial numbers of immigrants, although at levels somewhat lower than those of the immediate past.

Concurrent with the large inflow of immigrants to Canada in the first half of the century has been a significant outflow of population, particularly to the United States.

**Table A10—  
Immigration To and Estimated Emigration  
From Canada,  
Decades 1901-1911 to 1941-1951**

Decade	Immigration to Canada	Estimated Emigration from Canada	Estimated Net Gain or Loss from Exchange of Population With Other Countries
1901-1911	1,782,000	657,672	+ 1,124,328
1911-1921	1,612,437	1,007,587	+ 604,850
1921-1931	1,203,453	1,003,616	+ 199,837
1931-1941	149,649	241,567	- 91,918
1941-1951	547,882	378,918	+ 168,964
	5,295,421	3,289,360	+ 2,006,061

It will be seen from the table above that, although more than five million persons entered Canada in the period under review, only about two-fifths of this total represented a net gain to this country from exchange of population with other countries—emigration on a large scale had offset the major share of the inflow.

Little information is available on current trends in emigration. We have noted that, in the past, emigration has taken place on a large scale, particularly to the United States. A large proportion of those emigrants to the United States were

substantial average annual rate of 120,000<sup>1</sup>. The single immigration figure used is intended to average out possible fluctuations in the year to year rate. We have further assumed that about 53 per cent of this total will continue to be attracted to Ontario. It would appear from statistics on emigration compiled from Foreign Exchange Control Board records that, in 1949 and 1950, about 50 per cent of emigrants were from Ontario. We have assumed that this ratio will also continue to apply in the future.

On the basis of these assumptions, we estimate

**Table A11—Emigration to the United States and the United Kingdom  
From Canada, 1911-1953<sup>1</sup>**

Year	Emigration to United States from Canada	Emigration to U.K. from Canada	Year	Emigration to United States from Canada	Emigration to U.K. from Canada
1911-1920	742,185	201,690	1937	11,799	8,970
1921	72,317	21,055	1938	14,070	7,341
1922	46,810	16,197	1939	10,501	n.a.
1923	117,011	12,424	1940	10,806	n.a.
1924	200,690	15,822	1941	11,280	n.a.
1925	100,895	13,939	1942	10,450	n.a.
1926	91,019	10,481	1943	9,571	n.a.
1927	81,506	12,570	1944	9,821	n.a.
1928	73,154	15,804	1945	11,079	n.a.
1929	64,440	12,294	1946	20,434	9,065
1930	63,502	15,820	1947	23,467	7,898
1931	21,687	17,864	1948	24,788	7,178
1932	7,927	21,187	1949	24,516	7,525
1933	6,135	16,371	1950	21,885	6,970
1934	7,873	12,128	1951	25,880	5,000
1935	7,695	9,712	1952	33,354	7,500
1936	8,018	10,107	1953	36,283	6,870

(1) It is not known how accurate or comparable these statistics are.

attracted by higher living standards and greater opportunities. This is unlikely to occur to the same extent in the future. The gaps between both living standards and job opportunities in the two countries have been substantially narrowed in recent years, and Canada is now entering the greatest development period in her history.

Figures on emigration to the United States from Canada, based on data issued by the U.S. Immigration and Naturalization Service, and comparable statistics on emigration to the United Kingdom, reflected in data published by the U.K. Board of Trade, are reproduced in Table A11.

In arriving at a figure of "net immigration" for Ontario over the next two decades, we have assumed that gross immigration to Canada will be at the

that Ontario's "net immigration" will be at an average annual level of 31,000. In this instance, too, the single "net immigration" figure used is intended to average out possible fluctuations in the components and in the year to year rate.

	Canada	Ontario
Gross Immigration	120,000	63,500
Emigration		
To United States	50,000	25,000
To United Kingdom	10,000	5,000
To Other Countries	5,000	2,500
Net Immigration	55,000	31,000

<sup>1</sup> We assume that not many more will, in fact, emigrate to Canada, although the economy may be capable of absorbing immigrants in larger numbers than indicated.

## Interprovincial Movements

The net effect of movement of population in and out of the Province has been a fairly important factor in the immediate past in augmenting Ontario's population growth. In the decade 1921-

than for all other provinces except British Columbia.

Only Ontario and British Columbia made substantial net gains as a result of interprovincial migration. Five of the provinces recorded losses, the most significant of which were incurred by the

**Table A12—Elements of Population Growth in Ontario, 1921-1951**

Decade	Increase in Population in Decade		Natural Increase in Decade		Combined Net Gain from Exchange of Population With Other Countries and Other Provinces	
1921-1931	498,000	(100%)	344,000	(69%)	154,000	(31%)
1931-1941	356,000	(100%)	278,500	(78%)	77,500	(29%)
1941-1951	810,000	(100%)	505,000	(62%)	305,000	(38%)

1931, for example, the net gain from exchange of population with other countries and other provinces accounted for about 31 per cent of the overall population increase recorded. Comparable

three Prairie Provinces. A more detailed breakdown reveals that, between 1931 and 1941, Ontario made net gains in exchanges of population with all other provinces except British Columbia.

Decade	Increase in Population	Natural Increase	Net Gain from Interprovincial Movements	Net Immigration
1931-1941	356,000 (100%)	278,500 (78%)	68,300 (19%)	9,200 (3%)

statistics for the decades 1931-1941 and 1941-1951 are appended in Table A12.

The effects of purely interprovincial movements are, however, only available for the decade 1931-1941. In that period, Ontario made a net gain of 68,300 persons as a result of exchange of population with other provinces in Canada. In contrast,

The largest inflow in this period was from Saskatchewan, closely followed by that from Manitoba. As a group, the three Prairie Provinces lost 57,785 persons to Ontario. This figure represented about 85 per cent of Ontario's net gain from movements of this type. In absolute terms, exchange of population was heaviest with Quebec, although

**Table A13—Ontario's Exchange of Population With Other Provinces,<sup>1</sup> in the Ten Year Period 1931-1941**

	P.E.I.	N.S.	N.B.	Que.	Man.	Sask.	Alta.	B.C.
In Migrants	993	5,217	4,386	46,903	32,435	31,227	10,184	6,227
Out Migrants	249	3,830	1,983	38,507	8,125	3,843	4,093	8,730
Net Movement	+744	+1,387	+2,403	+8,396	+24,310	+27,384	+6,091	-2,503

(1) Exclusive of the Yukon and North West Territories.

exchange of population with other countries resulted in a net addition to population of only 9,200.

In the 1931-1941 decade, 137,700 persons moved into Ontario from other provinces and 69,400 left for other parts of Canada. In absolute terms, the favourable balance recorded of 68,300 was higher

the resulting net gain to Ontario was relatively small. We have reason to believe that in more recent years Ontario has been gaining population, on balance, from other provinces. Between the census years 1941 and 1951, population increased by 810,000 of which 505,000 was accounted for by natural increase, with the remainder of 305,000 being attributable to net in-movements from other

**Table A14—Population of Ontario, Census Years 1901-1951 and 1955<sup>1</sup>**  
 (In Thousands)

Age Group	1901	% of Total Population	1911	% of Total Population	1921	% of Total Population	1931	% of Total Population	1941	% of Total Population	1951	% of Total Population	1955	% of Total Population
0- 4	294.8	10.3	263.3	10.3	301.9	10.3	307.7	8.9	297.9	7.8	514.7	11.2	626.9	12.1
5- 9	230.6	10.5	244.2	9.7	307.8	10.4	333.0	9.7	301.5	7.9	399.3	8.7	501.0	9.7
10-14	229.8	10.5	233.8	9.3	275.7	9.4	318.2	9.2	324.8	8.5	325.3	7.1	399.5	7.7
15-19	229.7	10.5	240.8	9.5	255.0	8.7	319.0	9.3	339.2	8.9	315.7	6.9	339.5	6.6
20-24	216.0	9.9	247.2	9.8	239.9	8.2	291.2	8.4	324.0	8.6	352.3	7.7	357.9	6.9
25-29	178.6	8.2	228.4	9.0	238.6	8.1	264.8	7.7	315.7	8.3	387.3	8.4	406.6	7.8
30-34	154.9	7.1	195.6	7.7	224.3	7.7	252.2	7.4	286.5	7.6	351.0	7.6	394.6	7.6
35-39	144.0	6.6	172.0	6.8	219.5	7.5	246.7	7.2	268.4	7.1	340.8	7.4	377.8	7.3
40-44	127.0	5.8	150.0	5.9	187.1	6.4	228.6	6.7	250.4	6.6	302.4	6.6	333.3	6.4
45-49	104.5	4.8	133.1	5.3	161.1	5.5	206.3	6.0	232.6	6.1	268.1	5.8	315.9	6.1
50-54	89.1	4.1	116.5	4.6	141.2	4.8	177.7	5.2	214.1	5.7	247.5	5.4	266.1	5.1
55-59	70.6	3.2	87.2	3.5	112.4	3.8	137.1	4.0	181.7	4.8	210.3	4.6	231.2	4.5
60-64	62.7	2.9	72.3	2.9	96.9	3.3	115.0	3.4	149.7	4.0	182.5	4.0	193.4	3.7
65-69	47.3	2.2	54.8	2.2	69.8	2.4	92.7	2.7	116.3	3.1	155.2	3.4	163.2	3.2
70-74	34.7	1.6	40.8	1.6	48.0	1.6	71.6	2.1	85.9	2.3	115.9	2.5	128.8	2.5
75-79	21.3	1.0	26.0	1.0	29.7	1.0	40.0	1.2	55.2	1.5	70.4	1.5	83.2	1.6
80-84	11.6	0.5	13.8	0.6	16.1	0.6	19.8	0.6	29.6	0.8	38.0	0.8	42.8	0.8
85-89	4.1	0.2	5.5	0.2	6.6	0.2	7.7	0.2	11.0	0.3	15.8	0.3	15.9	0.3
90+	1.6	0.1	2.0	0.1	2.1	0.1	2.4	0.1	3.2	0.1	5.1	0.1	5.4	0.1
	2,182.9	100.0	2,527.3	100.0	2,933.7	100.0	3,431.7	100.0	3,787.7	100.0	4,597.6	100.0	5,183.0	100.0

(1) As at June 1.

countries and provinces. Immigration into Ontario amounted to a little over 290,000, so that when allowance is made for emigration from the Province, it is apparent that in-migration from other provinces occurred on a fairly substantial scale. Recently, the net gain to Ontario may well be as high as 20,000 persons annually.

In selecting a figure for future net interprovincial movements into Ontario, we have assumed that an average annual inflow from other provinces of 10,000 persons will take place until 1975. Our estimate has been influenced by Ontario's exper-

ience in the 1931-1941 decade, when Ontario's net gain from interprovincial movements averaged 6,800 per annum. Since 1941, an acceleration of economic activity with a subsequent raising of living standards has taken place and our attraction to Canadians in other provinces is probably greater now than in the 1931-1941 decade.

The single net figure selected for interprovincial movements is intended, in this instance also, to average out possible fluctuations in the year to year rate.

**Table A15—Projections of Ontario's Population to 1975,  
by Five Year Age Groups and by Percentage Distribution<sup>1</sup>**

Age Group	June, 1955 <sup>2</sup>	% of Total Popu- lation	June, 1960	% of Total Popu- lation	June, 1965	% of Total Popu- lation	June, 1970	% of Total Popu- lation	June, 1975	% of Total Popu- lation
0- 4	627,000	12.1	701,000	12.0	747,000	11.4	841,000	11.5	980,000	12.0
5- 9	501,000	9.7	640,000	10.9	713,000	10.9	758,000	10.4	851,000	10.4
10-14	400,000	7.7	511,000	8.7	649,000	9.9	723,000	9.9	767,000	9.4
15-19	339,000	6.6	410,000	7.0	522,000	7.9	660,000	9.0	733,000	9.0
20-24	358,000	6.9	362,000	6.2	433,000	6.6	544,000	7.4	682,000	8.3
25-29	407,000	7.8	392,000	6.7	396,000	6.0	466,000	6.4	577,000	7.1
30-34	395,000	7.6	434,000	7.4	417,000	6.4	421,000	5.8	491,000	6.0
35-39	378,000	7.3	412,000	7.0	451,000	6.9	435,000	6.0	438,000	5.4
40-44	333,000	6.4	391,000	6.6	422,000	6.4	460,000	6.3	444,000	5.4
45-49	316,000	6.1	350,000	6.0	393,000	6.0	424,000	5.8	462,000	5.6
50-54	266,000	5.1	300,000	5.1	345,000	5.3	387,000	5.3	416,000	5.1
55-59	231,000	4.5	257,000	4.4	289,000	4.4	332,000	4.5	372,000	4.5
60-64	193,000	3.7	217,000	3.7	240,000	3.7	270,000	3.7	310,000	3.8
65-69	163,000	3.2	174,000	3.0	195,000	3.0	215,000	2.9	242,000	2.9
70-74	129,000	2.5	138,000	2.3	147,000	2.2	164,000	2.2	181,000	2.2
75+	147,000	2.8	174,000	3.0	196,000	3.0	214,000	2.9	238,000	2.9
Total Population	5,183,000	100.0	5,863,000	100.0	6,555,000	100.0	7,314,000	10.0	8,184,000	100.0

(1) The principal assumptions upon which these projections have been made are: fertility rates will show a slight rise above those in 1954; death rates will continue to fall; net in-migration to Ontario from abroad and other provinces will average 41,000 annually until 1975; economic conditions will, in general, continue favourable.

(2) Dominion Bureau of Statistics' estimate.

### ONTARIO'S POPULATION FUTURE

On the basis of our projections, Ontario's population will exceed 6.5 million by 1965 and will reach 8.2 million by 1975, representing an increase in the next ten years of 27 per cent and 58 per cent over the next twenty. Numerically, this is an increase of 1.4 million in the first decade from 1955 to 1965 and over 1.6 million in the second, from 1965 to 1975.

It is anticipated that the rate of growth over the next ten years will be retarded as a result of the smaller female population in the younger, more fertile, age groups in relation to total population—a consequence which arises from the low birth rates of the 1930's. By the mid-1960's, the very high level of births which have occurred since World War II

will be translated into a record number of persons entering into the marriageable and family formation strata. Assuming the continuation of a high fertility rate, the growth in population in that period is expected to accelerate and may be further accentuated by a continuation of the decline in mortality rates.

The rate of Ontario's population growth has not been even. In the first decade of the century, 1901-1911, the average annual rate of Ontario's population growth was 1.58 per cent; in the decade between 1941 and 1951 it was 2.14 per cent while in the 4-year period from 1951-1955 it was 3.18 per cent. On the basis of our projections, the average annual rate of increase will be 2.65 per cent in the decade 1955-1965 and 2.49 per cent in the decade 1965-1975.

**Table A16—  
Average Annual Rate of Increase in Ontario's  
Population, 1901 to 1975**

Period	Population Increase	Average Annual Rate
		%
1901-1911	344,000	1.58
1911-1921	407,000	1.61
1921-1931	498,000	1.70
1931-1941	356,000	1.04
1941-1951	810,000	2.14
1951-1955	585,000	3.18
1955-1965	1,372,000	2.65
1965-1975	1,629,000	2.49

### Age Structure of Population

The age structure of our future population will show fairly wide variations from that of 1955 as shown in Table A17.

The age group 0-4, which includes the main body of children of pre-school age will represent about the same percentage of the total population in 1975 as in 1955, although the numerical increase will, of course, be substantial. The population between 5

and 19 years of age, comprising mainly those in schools, will increase enormously over the next 10-20 years. Between 1955 and 1965, this group will increase as a proportion of the total population from 23.9 per cent to 28.7 per cent and will continue on this high plateau for at least another decade. By 1975, there may be 1.1 million more young people in this category—a projected increase of nearly 90 per cent compared with an anticipated increase in the total population of 58 per cent. The impact of this growth will be greatest in the next ten years.

On the other hand, the relative importance of the 20-64 age group will probably decline. Numerically, this group, which contains a majority of the labour force, is expected to grow by 45.7 per cent—a slower rate than that of the total population. In other words, it is expected that over the next twenty years a smaller proportion of our population than at present will be engaged in providing for the needs of the younger and older segments.

The ranks of our senior citizens, 65 years and over, are expected to swell by 50 per cent in the period under review. The relative importance of this group may, however, decline slightly—from 8.5 per cent of the total population in 1955 to 8.1 per cent in 1975.

**Table A17—Projected Age Structure of Ontario's Population, 1955-1975**

Age Range	1955 <sup>1</sup>	% of Total Population	1965	% of Total Population	1975	% of Total Population	% Increase 1975/1955
0- 4	627,000	12.1	747,000	11.4	980,000	12.0	56.3
5-19	1,240,000	23.9	1,884,000	28.7	2,351,000	28.7	89.6
20-64	2,877,000	55.5	3,386,000	51.7	4,192,000	51.2	45.7
65 and Over	439,000	8.5	538,000	8.2	661,000	8.1	50.6
Total Population	5,183,000	100.0	6,555,000	100.0	8,184,000	100.0	57.9

(1) Dominion Bureau of Statistics estimate.



## APPENDIX II

# Trends In Ontario's Labour Force Since 1900<sup>1</sup>

### INTRODUCTION

Since the turn of the century, Ontario's labour force has increased by more than two and one half times, rising from 754,000 in 1901 to 1,987,000 in 1954. More than one-third of this increase of 1,233,000 has taken place during the last 13 years (the period of our greatest industrial growth) or in about one-quarter of the entire period under review.

Despite the rapid industrial and natural resource development experienced by the other Canadian provinces in recent years, Ontario still accounts for 37 per cent of the total Canadian labour force of over 5.4 million. In 1901, the proportion was 42 per cent, but it fell to 36 per cent by 1911, chiefly because of the heavy influx of homesteaders into the Western provinces, a movement which continued up to the outbreak of World War I. Thereafter, Ontario's percentage share of the Canadian labour force declined more slowly, until a low of about 35 per cent was recorded in the war year of 1941. It has since followed an upward trend.

### GROWTH OF THE LABOUR FORCE

Over the course of the past 50 odd years, the Ontario labour force has grown by some 168 per cent, compared with an increase in the Province's population over the same period of 131 per cent. The greater rate of growth in the labour force segment of the population relative to that for the population as a whole is, in large part, due to the increased numbers of females that have entered the labour force, in particular during and after World War II.

Although the labour force has increased at a greater rate than the population during the whole period from 1900 to the present, this does not hold true for the last decade. Since 1946, Ontario's population has grown by 23.3 per cent, whereas the labour force has increased by only 16.8 per cent. The explanation lies, firstly, in the record level of births experienced in the Province in those years; this has tended to swell the numbers in the lower

age groups of the population out of proportion to the growth experienced by the older age groups. Secondly, the depressed birth rates characteristic of the depression years of the 1930's caused an abnormal dip in the numbers of those who now fall into the age group 14 to 24. Apart from immigration, this age group of the native population supplies new workers for the labour force. Thirdly, the tendency, apparent in recent years, for young people to devote a longer time to their formal education has meant a further decline in the numbers of those from the above age group who enter the work force.

### OCCUPATIONAL DISTRIBUTION

Perhaps the most significant fact revealed by an examination of Ontario's labour force characteristics over the past 50 years is the marked change that has taken place in the distribution of labour resources between the various occupational groups which together make up the work force. This pattern of change in the allocation of labour resources points up the shift which has taken place in

<sup>1</sup> The labour force is defined as that portion of the population fourteen years of age and over who are at work, available for work or temporarily absent from work for reasons such as sickness, holidays, lay-offs and industrial disputes. The labour force is not fixed in size, but is in a state of flux. It is expanded by the entry of young persons, immigrants and temporary workers—students, for example. It is contracted as a result of deaths, retirements and marriages. Further contraction occurs as a result of emigration and physical incapacity. Hence, apart from any long-term growth, it is apparent that the numbers in the labour force will vary considerably from season to season throughout the year.

It should be pointed out that census figures prior to 1951 were based on the concept of "gainfully occupied" rather than that of "labour force". However, despite the fact that the census data before 1951 are not strictly comparable with the figures for later years, it is believed that the differences are not large enough to prevent the two sets of data from being considered together for the purposes of trend analysis. For a more detailed account of the differences between the two concepts see footnote (1), Table A25, entitled, "Numerical And Percentage Distribution Of The Gainfully Occupied In Ontario, By Age Groups, Census Years 1911-1941".

the nature of Ontario's economy from one based primarily on agriculture to one supported largely by a multiplicity of inter-dependent industries with manufacturing dominant.

The present century has seen the occupation of agriculture decline drastically, both in absolute numbers and as a percentage of the total labour force, while, on the other hand, it has witnessed the growing importance of the manufacturing and construction occupations along with the complementary service and clerical groups.

The census of 1901 showed that agriculture accounted for about 41 per cent of Ontario's total labour force and for 47 per cent of all working males. Thirty years later, these proportions had declined to 23 per cent and 27 per cent, respectively. By 1951, only 11 per cent of the labour force and no more than 13 per cent of the male working force was engaged in agriculture. In brief, during this 50 year period, the agricultural work force declined by one-third from 306,000 to 203,000 and, as a percentage of the total work force, fell from 41 per cent to 11 per cent.

As the occupation of agriculture declined in relative importance, others, such as those of manufacturing and construction, were in their ascendancy. In 1901, these two occupations accounted for 179,000 workers or 24 per cent of the total labour force, but, in 1951, provided jobs for close to 558,000 workers, or nearly 30 per cent of the labour force. The service occupations, both professional and personal, have followed a similar pattern. In 1901, this occupational group provided employment for 95,000 persons, or 13 per cent of the labour force, and 50 years later, accounted for more than three and one half times more jobs, representing nearly 18 per cent of the labour force.

Although the increase in job opportunities made possible by the development of the manufacturing, construction, transportation and service industries over the past 50 years has been spectacular, the clerical group made the greatest gain. Between 1901 and 1951, the number of workers in the clerical occupations increased by nearly eight times—from 27,000 to 237,000—while the proportion of the total work force accounted for by this group more than tripled—from 4 per cent to nearly 13 per cent.

## AGE GROUP COMPOSITION

A study of the age group composition of the labour force also reveals some interesting changes. Figures for this purpose are not available prior to 1911, but they are for later years; these clearly set

out the various trends. In 1911, some 299,000 persons, or slightly more than 30 per cent of the total work force, were concentrated in the age group 14-24. By 1931, although the actual number in this age group had risen to 343,000, their proportion had declined to about 25 per cent. The downward trend in the relative importance of this age group has continued unchecked and, in fact, has tended to accelerate during the post-war period. In 1954, only 21 per cent of the labour force fell within this age group. The recent accelerated decline in the number of persons in this age group of the labour force results from the depressed birth rate of the 1930's and the tendency for many young people to extend the period of their formal education and so defer their entrance into the labour force.

In contrast to the trend indicated in the lower age groupings, the 25-64 labour force age group, since 1911, has shown a tendency to rise. In 1911, the numbers in this age group represented over 65 per cent of the entire labour force; in 1931, 70 per cent; and in 1941 and 1946, 71 per cent. During the course of the past eight years, this proportion has continued to increase until, in 1954, nearly 1.5 million workers, or 74.5 per cent of the total labour force, was concentrated within this age group. This increase in relative importance has been due almost entirely to the growth of the 25-44 age group. This age group has consistently shown annual gains both in absolute and relative terms. All other age groups in the labour force have either declined or remained virtually unchanged in relative importance. In 1954, the age group 25-44 accounted for over 46 per cent of the entire work force, as compared with less than 43 per cent in 1946. Much of the gain enjoyed by this age group is attributable to the entry of large numbers of immigrant workers. It is estimated that close to 50 per cent of all immigrants who have entered Ontario since 1946 were within the age group 25-44. A high proportion of immigrants in this age group entered the labour force and thereby exerted considerable influence upon the age group composition of the labour force.

As the labour force has tended to become increasingly concentrated in the 25-64 age group, it is useful to compare its growth with that of the population as a whole. In 1911, this labour force age group represented over 25 per cent of the total provincial population. From 1911 to 1941, it grew at a faster rate than did the population as a whole. Since then, however, its rate of growth has just managed to keep pace with that of the population as a whole and, in fact, during the past two years, has failed to do so.

The fact that this 25-64 segment of the labour force has been able to match the rate of growth of the population during most of the present post-war period, despite the record level of births, arises, in large part, from the fact that the post-war wave of immigration contained a high proportion of workers who fell into the population age group 25-64 and more especially into the component age group of 25-44. This was mainly responsible for the rise in the proportion of those in the population age group 25-64 who were also in the labour force from 57.4 per cent in 1946 to 59.9 per cent in 1954. As the level of immigration has tended recently to fall off, so the rate of growth in this most productive segment of the labour force (age group 25-64) has tended to dip below that for the population as a whole.

On the basis of the population projections set out in Appendix I, the population age group 25-64 is expected, during the next 20 years, to grow by only 39 per cent, as compared with a growth in the whole population of 58 per cent. Inasmuch as this segment of the population provides the bulk of the labour force, there is every likelihood that the increase in the aggregate labour force will be slower than that of the population as a whole. If the Province receives a much larger influx of immigrant workers, this eventuality might be averted, in part at least. But the probabilities are that the ratio of labour force to population will decline, particularly over the next decade. Although the rate of growth experienced by the age group 25-64 may still be below that for the population as a whole in the decade from 1965 to 1975, the rate of decline will be more moderate than that in the previous decade. In the interval, automation concepts will be logically associated with the trends suggested.

For 30 years after 1921, workers aged 65 years and over accounted for about 5 per cent of the total labour force. Commencing in 1950, this proportion declined until, by 1954, it was down to 4.5 per cent. This downward trend may result in part from earlier retirements on pensions or savings. It also suggests that the older workers may be facing increasing difficulties in finding job placement.

## SEX DISTRIBUTION

The sex distribution of Ontario's labour force has also changed considerably during the past 50 years. Although, of course, the male segment still holds a dominant position in the total work force, the female sector has grown consistently, both in number and in proportion to the labour force as

a whole. At present, one-quarter of Ontario's labour force is composed of female workers, compared with 18.5 per cent in 1931 and some 14 per cent in 1901. Since the turn of the century, the number of females in the Province's labour force has more than quadrupled, rising from 109,000 in 1901 to 488,000 in 1954, while the total of male workers has increased two and one third times. The ratio of male to female labour is now 3 to 1 as against 6 to 1 at the turn of the century.

The more than fourfold rise in the number of gainfully occupied married women—from about 41,000 in 1941 to nearly 168,000 in 1951—was one of the outstanding changes in the composition of Ontario's labour force during the 1941-51 decade. About 98 per cent of the numerical growth in the female labour force during this decade resulted from an increase in the number of working wives; the proportion of married women in the female labour force rose from 13 per cent to 38 per cent. In 1941, the ratio of gainfully occupied married women to total married women in the provincial population was 1 to 21, compared with 1 to 7 in 1951. During most of the post-war years, the female segment of our labour force has accounted for 23 to 24 per cent of the total work force. In 1954, the proportion rose to 24.6 per cent, while indications are that the proportion will be even higher for 1955.

The bulk of the Province's female labour force has always been, and still is, concentrated in the manufacturing, service, and clerical occupations. However, an examination of census data since 1911 indicates that the entry of the female worker into the manufacturing and service industries has failed to keep pace with the great growth in the labour requirements of these two industries. For example, in 1911, 26 per cent of all workers engaged in manufacturing were female, compared with 19 per cent in 1941 and 1951. This trend is even more evident in the service industries where the proportion of female workers to the total work force fell from 61 per cent in 1901 to 54 per cent in 1931 and to 41 per cent in 1951. The clerical occupations, however, have absorbed an increasing proportion of females. This may be partly occasioned by the fact that the female worker has a greater liking for the routine and environment of the office as well as a particular ability for operating its many and varied mechanical business aids. Furthermore, the clerical positions, in general, have received lower scales of remuneration than other occupations, with the result that there has been less inclination for males to compete for jobs in these fields. At any

rate, the proportion of female workers in this occupation has made sharp and sustained gains over the period under discussion, rising from 28 per cent in 1901 to 50 per cent in 1931 and 61 per cent in 1951.

## SUMMARY

To summarize: In 1901, 47 per cent of Ontario's male labour force was concentrated in agriculture, 23 per cent was employed in manufacturing and construction, while another 12 per cent was engaged in transportation and trade and finance occupations. Fifty years later, in 1951, agriculture accounted for only 13 per cent of the male labour force, manufacturing for 24 per cent, the service industries for 14 per cent, while another 30 per cent was concentrated in construction, transportation and trade and finance.

The structural changes in the Province's economy have produced a much better balance in the occupational distribution of the Ontario labour force than was the case even 20 or 30 years ago. An increasing proportion of workers are employed in manufacturing and the related tertiary industries, distribution, construction, commercial, financial and other service industries. As the economy develops, we may expect that these industries will continue to absorb an increasing share of our labour force. A growing industrial and urbanized population, enjoying a rising standard of living in keeping with higher levels of personal income, has prompted, and will continue to sustain, the growth of the construction, transportation and service industries. Similarly, industrial growth in combination with a rising level of trade and commerce has, among other things, created the need for increasing numbers of administrative and clerical personnel. The present day distribution of the work force among the various occupations is in sharp contrast to the heavy concentration of such resources in the single occupation of agriculture at the turn of the century.

Our labour force resources have shown a consistent tendency since 1911 to become increasingly concentrated in the age group 25-64. In 1954, virtually 75 per cent of the entire work force fell into this age group, as compared with 65 per cent in 1911. Population projections covering the period up to and including 1975, indicate that the rate of growth in the 25-64 age group will not match that for the population as a whole. Since the great bulk of our labour force is drawn from this age group of the population, it appears evident that for some years to come, barring very high levels of immigra-

tion, a relatively smaller segment of the population will be responsible for production within the Province. In the meantime, the increased application of automation may serve to mitigate the consequences of this trend.

The latter possibility serves to emphasize further the relationships existing between population developments and economic growth patterns. The labour force, reflecting as it does the matching of people to industry, is a continuing measure of our economic strength and growth.

## LABOUR FORCE PROJECTIONS, 1955 to 1975

On the basis of population projections, Ontario's labour force is expected to rise from about 2,025,000 in 1955 to 2.5 million in 1965 and to about 3.1 million by the end of the following decade. In brief, during the course of the next 20 years, an additional one million workers, or an average of 50,000 per annum, will become available to the Ontario economy.

Although since 1951 the labour force has grown at the same rate as the segment of the population aged 14 years and over, during the next decade the labour force as a whole will likely tend to grow at a somewhat slower rate than this segment of the population. Actually, the projections indicate a growth in the population 14 years of age and over during the next 20 years of 53.5 per cent, as against somewhat more than 52 per cent for the labour force.

The difference in the rates of growth as between the labour force and the population segment 14 years of age and over arises chiefly from the expectation that, until 1965 at least, the lower and upper age groups of the labour force will grow at a slower rate than the population in these corresponding age groups. The tendency for secondary school students to lengthen their period of formal education is expected to continue during the next decade, although it will be less pronounced. Similarly, enrolment in the universities of the Province is expected to rise sharply over the next two decades. The contribution of the population age group 20-24 to the labour force would thus tend to be lowered; however, this trend will likely be offset by an increase in the proportion of females in these ages seeking employment, particularly in the clerical occupations. Since 1946, owing largely to earlier retirement, the percentage contribution of the population age group 65 years and over to the labour force has declined consistently. This trend is expected to continue for some time in the future,

facilitated by the fact that an increasing proportion of the industrial workers in the Province are being covered by pension plans of one kind or another.

The anticipated percentage contributions of the various population age groups to the labour force during the decade 1965-1975 have been held at the 1965 levels throughout. This was done because of a scarcity of information for estimating the contributions of the several population age groups to the labour force during this decade. However, it is felt that the proportions allocated to the population age groups, especially in the range 25-64, are reasonably generous, in the light of Ontario's experience

in the post-war period, when the Province received a record number of immigrants.

No attempt has been made to project the male and female composition of Ontario's labour force. However, it is believed that the female segment of the work force will continue to grow, both in absolute numbers and as a percentage of the labour force as a whole, although it is anticipated that the rate of growth will be less than that experienced between the census years 1941 and 1951. It also seems reasonable to assume that a relatively high proportion of the female segment of the labour force will continue to be composed of married women.

**Table A18—Distribution of the Labour Force in Canada and Ontario, by Sex, 1901 to 1954<sup>1</sup>**

Year	Canada			Ontario			Ontario as % of Canada		
	Male (000's)	Female (000's)	Total (000's)	Male (000's)	Female (000's)	Total (000's)	Male %	Female %	Total %
1901 <sup>2</sup>	1,545	238	1,783	646	109	754 <sup>3</sup>	41.8	45.8	42.3
1911 <sup>2</sup>	2,359	365	2,724	836	155	991	35.4	42.5	36.4
1921	2,675	489	3,164	922	195	1,117	34.5	39.9	35.3
1931	3,257	665	3,922	1,096	249	1,346	33.7	37.4	34.3
1941	{ 3,677 3,363	834 833	4,511 <sup>4</sup> 4,196 <sup>5</sup>	1,257 1,140	315 315	1,573 1,455	34.2 33.9	37.8 37.8	34.9 34.7
1946	3,747	1,082	4,829	1,284	417	1,701	34.3	38.5	35.2
1947	3,869	1,073	4,942	1,340	419	1,759	34.6	39.0	35.6
1948	3,923	1,065	4,988	1,364	412	1,776	34.8	38.7	35.6
1949	3,992	1,091	5,083	1,388	427	1,815	34.8	39.1	35.7
1950	4,051	1,112	5,163	1,396	430	1,826	34.5	38.7	35.4
1951	4,071	1,146	5,217	1,423	444	1,867	35.0	38.7	35.8
1952	4,133	1,181	5,314	1,455	454	1,909	35.2	38.4	35.9
1953	4,197	1,186	5,383	1,484	458	1,942	35.4	38.6	36.1
1954	4,207	1,219	5,426	1,499	488	1,987	35.6	40.0	36.6

(1) In the census years, 1901 to 1941, the "gainfully occupied" rather than the "labour force" concept was used in determining the labour force status. Figures for the years 1946 to 1954 were obtained by averaging the estimates contained in the quarterly and monthly labour force survey reports published by the Dominion Bureau of Statistics.

(2) 10 years of age and over.

(3) Does not add due to rounding.

(4) Includes persons on Active Service.

(5) Excludes persons on Active Service.

**Table A19—Numerical and Percentage Distribution of Ontario's Labour Force,<sup>1</sup>  
by Occupation Group and Sex, Census Years 1901-1951**

		All Occupations	Agricultural	Fishing and Trapping	Logging	Mining and Quarrying	Manufacturing	Construction	Transportation	Trade and Finance	Service**				
											Professional	Personal	Total	Clerical	Labourers <sup>3</sup>
1901	Male No. (000's)	646	303	2 <sup>4</sup>	6	4	145		78		n.a.	14	37	20	51
	% 100	47	*	1	1	23		12			2	6	3	8	*
	Female No. (000's)	109	4	*	—	*	34		5		n.a.	47	58	8	*
	% 100	4	*	—		31		5			43	54	7	*	
1911	Total No. (000's)	754	306	2	6	4	179		83		n.a.	61	95	27	51
	As % of Labour Force	100	41	*	1	1	24		11		8	13	4	7	
	Male No. (000's)	836	301	4	11 <sup>4</sup>	17 <sup>5</sup>	129	54	56	71	19	24	49	28	117
	% 100	36	*	1	2	15	6	7	8	8	2	3	6	3	14
1921	Female No. (000's)	155	6	*	—	—	46	*	2	14	17	52	70	17	*
	% 100	4	*	—		29	*	2	9	11	34	45	11	*	
	Total No. (000's)	991	307	4	11	17	175	54	58	85	36	76	119	45	117
	As % of Labour Force	100	31	*	1	2	18	6	6	9	4	8	12	5	12
1931	Male No. (000's)	922	289	2 <sup>6</sup>	8	9	150	64	71	91	28	24	68	51	117
	% 100	31	*	1	1	16	7	8	10	3	3	7	6	13	*
	Female No. (000's)	195	5	*	—	*	40	*	7	21	31	45	77	44	*
	% 100	3	*	—		21	*	3	11	16	23	39	22	*	
1941 <sup>7</sup>	Total No. (000's)	1,117	294	2	8	9	190	64	77	113	59	69	145	95	117
	As % of Labour Force	100	26	*	1	1	17	6	7	10	5	6	13	8	10
	Male No. (000's)	1,096	298	6	9	15	181	77	102	112	39	44	97	54	143
	% 100	27	*	1	1	17	7	9	10	4	4	9	5	13	*
1951	Female No. (000's)	249	7	*	—	*	42	*	7	23	39	76	115	54	*
	% 100	3	*	—		17	*	3	9	16	30	46	22	*	
	Total No. (000's)	1,346	305	6	9	15	224	77	110	135	77	120	212	109	144
	As % of Labour Force	100	23	*	1	1	17	6	8	10	6	9	16	8	11

Note: Columns and rows will not add because of rounding and omissions.

Occupations not stated, which totalled 280 in 1901, 0 in 1911, 1,749 in 1921, 628 in 1931, 3,400 in 1941 and 14,337 in 1951 have been omitted.

\* Less than 500, or 0.5 per cent, as the case may be.

\*\* The numbers shown under Service, Professional and Personal do not add to the Total, on account of omissions.

(1) 10 years and over in 1901 and 1911, 14 years and over in 1921, 1931, 1941 and 1951.

(2) Includes labourers in all industries except agriculture, fishing, logging and mining.

(3) Does not include Indians.

(4) Includes pulp mill employees.

(5) Includes almost all mine and smelter employees, except clerical workers.

(6) Does not include Indians living on reserves.

(7) Excludes persons on Active Service on June 2, 1941.

**Table A20—Numerical and Percentage Distribution of Ontario's Labour Force, by Sex,  
1901-1954<sup>1</sup>**

Year	Male		Female		Total	
	No.	% of Total	No.	% of Total	No.	% of Total
	(000's)	%	(000's)	%	(000's)	%
1901	646	85.6	109	14.4	754	100.0
1911	836	84.4	155	15.6	991	100.0
1921	922	89.6	195	17.4	1,117	100.0
1931	1,096	81.5	249	18.5	1,346	100.0
1941 <sup>2</sup>	1,257	79.9	315	20.1	1,573	100.0
1946	1,284	75.5	417	24.5	1,701	100.0
1947	1,340	76.2	419	23.8	1,759	100.0
1948	1,364	76.8	412	23.2	1,776	100.0
1949	1,388	76.5	427	23.5	1,815	100.0
1950	1,396 <sup>3</sup>	76.5	430	23.5	1,826	100.0
1951	1,423	76.2	444	23.8	1,867	100.0
1952	1,455	76.2	454	23.8	1,909	100.0
1953	1,484	76.4	458	23.6	1,942	100.0
1954	1,499	75.4	488	24.6	1,987	100.0

(1) Data for the period 1901 to 1941 applies to the gainfully occupied rather than the labour force.

(2) Includes persons on Active Service.

(3) Rounded in order to add.

**Table A21—Ontario's Labour Force as a Percentage of Total Population  
and of Population 14 Years and Over, by Sex, 1901-1954**

Year	Labour Force <sup>1,2</sup>								
	Number			Per cent of Total Population			Per cent of Population 14 years of age and over		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
	(000's)	(000's)	(000's)	%	%	%	%	%	%
1901	646	109	754	58.9 <sup>3</sup>	10.0 <sup>3</sup>	34.6 <sup>3</sup>	83.6 <sup>3</sup>	14.1 <sup>3</sup>	48.9 <sup>3</sup>
1911	836	155	991	64.3	12.6	39.2	88.1	17.5	54.1
1921	922	195	1,117	62.2	13.4	38.1	87.0	18.7	53.2
1931	1,096	249	1,346	62.7	14.8	39.2	84.7	20.1	53.1
1941 <sup>4</sup>	1,257 <sup>4</sup>	315 <sup>4</sup>	1,573 <sup>4</sup>	65.5	16.9	41.5	84.6	21.8	53.7
1946	1,284	417	1,701	62.2	20.6	41.6	80.9	26.6	53.9
1947	1,340	419	1,759	63.6	20.3	42.1	83.3	26.3	55.0
1948	1,364	412	1,776	63.2	19.5	41.5	83.6	25.5	54.7
1949	1,388	427	1,815	62.8	19.7	41.5	83.5	26.0	54.9
1950	1,396	430	1,826	62.1	19.4	40.8	82.9	25.6	54.3
1951	1,423	444	1,867	61.5	19.4	40.6	83.1	26.0	54.6
1952	1,455	454	1,909	60.5	19.2	40.1	82.1	25.9	54.2
1953	1,484	458	1,942	60.0	18.9	39.7	82.4	25.7	54.2
1954	1,499	488	1,987	58.9	19.5	39.4	81.4	26.8	54.2

Note: Figures may not add on account of rounding.

(1) The "gainfully occupied" rather than the "labour force" concept was used prior to 1951 for determining the labour force status.

(2) Covers persons 10 years of age and over in 1901 and 1911, 14 years and over in the other years. In the period 1946 to 1954, with the exception of the census year 1951, the male and female population, 14 years of age, was estimated.

(3) The lower percentage of the population in the labour force for 1901 than for other census years is due in part to Indians being included in the population but not in the labour force.

(4) Includes persons on Active Service.

(5) Excludes persons on Active Service.

**Table A22—Agricultural and Non-Agricultural Composition of the Labour Force in Canada and Ontario, 1901 to 1954<sup>1</sup>**

Year	Labour Force, 14 years of age and over <sup>2</sup>					
	Canada		Ontario		Ontario as % of Canada	
	Agricultural Labour Force (000's)	Non-Agricultural Labour Force (000's)	Agricultural Labour Force (000's)	Non-Agricultural Labour Force (000's)	Agricultural Labour Force %	Non-Agricultural Labour Force %
1901	717	1,066	306	448	49.7	49.0
1911	934	1,790	307	684	32.9	38.2
1921	1,035	2,129	294	823	28.4	38.7
1931	1,128	2,794	305	1,041	27.0	37.3
1941 <sup>3</sup>	1,084	3,112	270	1,185	24.9	38.1
1946	1,190	3,639	321	1,380	27.0	37.9
1947	1,125	3,817	301	1,458	26.8	38.2
1948	1,100	3,888	291	1,485	26.5	38.2
1949	1,084	3,999	286	1,529	26.4	38.2
1950	998	4,165	255	1,571	25.6	37.7
1951	943	4,274	240	1,627	25.5	38.1
1952	874	4,440	225	1,684	25.7	37.9
1953	862	4,591	220	1,722	25.5	38.1
1954	879	4,547	251	1,736	28.6	38.2

(1) For the years 1901 to 1941, data applies to the gainfully occupied rather than the labour force.

(2) Ten years of age and over in 1901 and 1911.

(3) Excludes persons on Active Service.

**Table A23—Agricultural and Non-Agricultural Composition of Ontario's Labour Force, by Sex, 1901 to 1954<sup>1</sup>**

Year	Labour Force, 14 years of age and over <sup>2</sup>												
	Agricultural						Non-Agricultural						
	Male		Female		Total		Male		Female		Total		
	Total Labour Force (000's)	% of Agricultural Labour Force No.	Total Labour Force (000's)	% of Agricultural Labour Force No.	Total Labour Force (000's)	As % of Labour Force No.	Total Labour Force (000's)	% of Non-Agricultural Labour Force No.	Total Labour Force (000's)	% of Non-Agricultural Labour Force No.	Total Labour Force (000's)	%	
1901	754	303	98.7	4	1.3	306	40.6	343	76.6	105	23.4	448	59.4
1911	991	301	98.1	6	1.9	307	31.0	535	78.2	149	21.8	684	69.0
1921	1,117	289	98.2	5	1.8	294	26.3	633	77.0	190	23.0	823	73.7
1931	1,346	298	97.8	7	2.2	305	22.7	798	76.7	243	23.3	1,041	77.3
1941 <sup>3</sup>	1,455	265	98.0	5	2.0	270	18.6	875	73.9	310	26.1	1,185	81.4
1946	1,701	275	85.7	46	14.3	321	18.9	1,009	73.1	371	26.9	1,380	81.1
1947	1,759	251	83.5	50	16.5	301	17.1	1,089	74.7	369	25.3	1,458	82.9
1948	1,776	250	86.1	40	13.9	291	16.4	1,113	74.9	372	25.1	1,486	83.6
1949	1,815	252	88.2	34	11.8	286	15.7	1,136	74.3	394	25.7	1,530	84.3
1950	1,826	234	91.8	21	8.2	255	14.0	1,161	73.9	410	26.1	1,571	86.0
1951	1,867	217	90.4	23	9.6	240	12.8	1,207	74.2	421	25.8	1,627	87.2
1952	1,909	204	90.7	21	9.3	225	11.8	1,250	74.3	433	25.7	1,684	88.2
1953	1,942	207	93.7	14	6.3	221	11.4	1,278	74.2	444	25.8	1,722	88.6
1954	1,987	235	93.7	16	6.3	251	12.6	1,264	72.8	472	27.2	1,736	87.4

(1) For the period 1901 to 1941, data applies to the gainfully occupied rather than the labour force. Figures for the years 1946 to 1954 were calculated by averaging the results of the quarterly and monthly surveys published by the Dominion Bureau of Statistics.

(2) Ten years of age and over in 1901 and 1911.

(3) Excludes persons on Active Service.

**Table A24—Ontario's Labour Force as a Percentage of the Population, 14 years and over, by Age Groups, 1946-1954**

Year	14-19	20-24	25-44	45-64	65 +	Total
1946	Labour Force (000's)	193	222	726	473	87
	Population (000's)	397 <sup>1</sup>	349	1,221	849	340
	Labour Force as % of Pop'n	48.6	63.6	59.5	55.7	25.6
1947	Labour Force (000's)	197	237	755	481	89
	Population (000's)	392 <sup>1</sup>	350	1,242	862	354
	Labour Force as % of Pop'n	50.3	67.7	60.8	55.8	25.1
1948	Labour Force (000's)	184	240	771	491	90
	Population (000's)	387 <sup>1</sup>	352	1,268	873	369
	Labour Force as % of Pop'n	47.5	68.2	60.8	56.2	24.4
1949	Labour Force (000's)	186	247	798	493	91
	Population (000's)	386 <sup>1</sup>	354	1,303	885	379
	Labour Force as % of Pop'n	48.2	69.8	61.2	55.7	24.0
1950	Labour Force (000's)	175	243	812	505	91
	Population (000's)	383 <sup>1</sup>	353	1,339	897	389
	Labour Force as % of Pop'n	45.7	68.8	60.6	56.3	23.4
1951	Labour Force (000's)	177	244	839	517	90
	Population (000's)	378 <sup>1</sup>	352	1,382	908	400
	Labour Force as % of Pop'n	46.8	69.3	60.7	56.9	22.5
1952	Labour Force (000's)	167	243	881	526	92
	Population (000's)	387 <sup>1</sup>	358	1,439	929	411
	Labour Force as % of Pop'n	43.2	67.9	61.2	56.6	22.4
1953	Labour Force (000's)	166	246	902	540	88
	Population (000's)	390 <sup>1</sup>	359	1,466	950	421
	Labour Force as % of Pop'n	42.6	68.5	61.5	56.8	20.9
1954	Labour Force (000's)	174	244	918	562	89
	Population (000's)	402 <sup>1</sup>	361	1,500	972	431
	Labour Force as % of Pop'n	43.3	67.6	61.2	57.8	20.6

(1) Estimated.

**Table A25—Numerical and Percentage Distribution of the Gainfully Occupied<sup>1</sup> in Ontario, by Age Groups, Census Years 1911-1941**

Census Year	14-19	20-24	25-64	65 +	Total Gainfully Occupied
1911	No. (000's)	299 <sup>2</sup>		647	45
	% Gainfully Occupied	30.1		65.3	4.6
1921	No. (000's)	137	158	767	55
	% Gainfully Occupied	12.3	14.1	68.7	4.9
1931	No. (000's)	139	204	935	69
	% Gainfully Occupied	10.3	15.1	69.5	5.1
1941 <sup>3</sup>	No. (000's)	158	227	1,111	78
	% Gainfully Occupied	10.0	14.4	70.6	5.0

(1) Prior to 1951, the concept of "gainfully occupied" was used rather than that of "labour force". In the 1941 Census, "gainful occupation" was defined as one by which the person who pursues it earns money or in which he assists in the production of marketable goods. Older persons who, because of physical disability or other reasons, had given up their former occupations were enumerated as "retired", while only those young persons not attending school and regularly employed in some gainful occupation were included among the gainfully occupied. Children 14 years of age and over (prior to 1941, 10 years and over), assisting parents in the work of a farm or in some family business in a "no pay" capacity were considered as gainfully occupied, but daughters assisting with household duties in their own homes without wages were not included in the gainfully occupied population.

Commencing with a report for November, 1945, the "labour force" concept has been used in classifying the population 14 years of age and over. Under this system, persons are classified as "in the labour force" or "not in the labour force", on the basis of their activity during the survey week. In short, those who were at work during any part of the week, or had jobs from which they were temporarily absent, or were looking for work are included in the labour force (as either employees, own-accounts, paid workers, or unpaid family workers) while those who did not work for pay or profit during the survey week and had no job and were not looking for work are classed as not in the labour force (as either permanently unable or too old to work, keeping house, going to school, retired or voluntarily idle, etc.).

The "labour force" includes some who would not be considered "gainfully occupied" since groups such as pensioners, housewives and students who did some work, had a job or were seeking work during the survey week are included in the labour force. Furthermore, young persons out of school who have never worked (and, therefore, have no occupation) but are looking for work are not included in the gainfully occupied but are in the labour force. On the other hand, the voluntarily idle are excluded from the labour force whereas some of them, on the basis of usual activity, would be included in the gainfully occupied.

Although the figures showing the gainfully occupied by age group in the period 1911 to 1941 are not strictly comparable with those shown under the labour force age distribution for 1946-1954, it is believed that the differences are not great enough to prevent the two sets of figures from being read together for the purposes of trend analysis.

(2) Includes the gainfully occupied in the age groups 10-14 years and 15-24 years.

(3) Includes Active Service.

**Table A26—Numerical and Percentage Distribution of Ontario's Labour Force,  
by Age Groups, 1945-1954<sup>1</sup>**

Year		14-19	20-24	25-44	45-64	65+	Total Labour Force
1945 <sup>2</sup>	No. (000's)	183	183	667	462	88	1,583
	% of Labour Force	11.6	11.6	42.1	29.2	5.5	100.0
1946	No. (000's)	193	222	726	473	87	1,701
	% of Labour Force	11.3	13.1	42.7	27.8	5.1	100.0
1947	No. (000's)	197	237	755	481	89	1,759
	% of Labour Force	11.2	13.5	42.9	27.3	5.1	100.0
1948	No. (000's)	184	240	771	491	90	1,776
	% of Labour Force	10.4	13.5	43.4	27.6	5.1	100.0
1949	No. (000's)	186	247	798	493	91	1,815
	% of Labour Force	10.2	13.6	44.0	27.2	5.0	100.0
1950	No. (000's)	175	243	812	505	91	1,826
	% of Labour Force	9.6	13.3	44.5	27.6	5.0	100.0
1951	No. (000's)	177	244	839	517	90	1,867
	% of Labour Force	9.5	13.1	44.9	27.7	4.8	100.0
1952	No. (000's)	167	243	881	526	92	1,909
	% of Labour Force	8.7	12.7	46.2	27.6	4.8	100.0
1953	No. (000's)	166	246	902	540	88	1,942
	% of Labour Force	8.6	12.7	46.4	27.8	4.5	100.0
1954	No. (000's)	174	244	918	562	89	1,987
	% of Labour Force	8.7	12.3	46.2	28.3	4.5	100.0

(1) Since November, 1945, the Dominion Bureau of Statistics has conducted sample surveys on a regional basis to obtain data concerning the labour force. Until November, 1952, these surveys were carried out at quarterly intervals, but since that date they have taken place each month. About 30,000 households, chosen by random area sampling methods in some 115 different areas in Canada, are visited each month and information obtained for all persons 14 years of age and over.

The final estimates are obtained by applying to the sample survey results, weights based on estimated totals of population, separately for age and sex groups, in each province. These totals are derived from the official estimates of population based on latest census counts, adjusted by the numbers of births, deaths, immigrants and emigrants for the intervening period.

Annual figures for the period, 1946-1954, have been obtained by averaging the results of the quarterly and monthly surveys for the years concerned.

(2) As at November 17.

**Table A27—Ontario Labour Force Projections as a Percentage of Projected Population,  
14 Years and Over, by Age Groups, 1955-1975<sup>1</sup>**

Year		14-19	20-24	25-44	45-64	65+	Total
1955	Labour Force (000's)	180	243	930	583	88	2,024
	Population (000's)	419	358	1,513	1,006	439	3,735
	Labour Force as % of Pop'n	43.0	68.0	61.5	58.0	20.0	54.2
1960	Labour Force (000's)	209	246	1,007	663	92	2,917
	Population (000's)	504	362	1,629	1,124	486	4,105
	Labour Force as % of Pop'n	41.5	68.0	61.8	59.0	19.0	54.0
1965	Labour Force (000's)	255	294	1,045	760	97	2,451
	Population (000's)	638	433	1,686	1,267	538	4,562
	Labour Force as % of Pop'n	40.0	68.0	62.0	60.0	18.0	53.7
1970	Labour Force (000's)	321	370	1,105	848	107	2,751
	Population (000's)	803	544	1,782	1,413	593	5,135
	Labour Force as % of Pop'n	40.0	68.0	62.0	60.0	18.0	53.6
1975	Labour Force (000's)	353	464	1,209	936	119	3,081
	Population (000's)	882	682	1,950	1,560	661	5,735
	Labour Force as % of Pop'n	40.0	68.0	62.0	60.0	18.0	53.7

(1) The proportion of the population in the age group 14-19 in the labour force declined from 48.6 per cent in 1946 to 43.3 per cent in 1954. Although this trend will likely continue for some years, it may tend to level out around 1965. Accordingly, the proportion of those in this population age group who are in the labour force is reduced from 43 per cent in 1955 to 40 per cent in 1965 through 1975. As the proportion of the population in the age group 20-24 who are in the labour force averaged 68 per cent over the last three years, it is assumed that roughly this proportion will apply to 1975. Although it is expected that, in future, a higher percentage of those in this age group will attend university, this trend will likely be counterbalanced by an increase in the proportion of females in the population age group 20-24 included in the labour force. Since the proportion of the 25-44 age group in the labour force has shown a tendency to rise somewhat over the post-war period, it is assumed that this trend will continue during at least the next decade and that this group's contribution to the labour force will rise from an estimated 61.5 per cent in 1955 to 62.0 per cent by 1965 and thereafter tend to level out. As, from 1946 to 1954, the contribution of the age group 45-64 to the labour force increased from 55.7 per cent to 57.8 per cent, it is assumed that the contribution of this age group will tend to rise somewhat over the next few years to 60 per cent by 1965 through 1975. (It should be noted that an unusually high level of immigration would be a major factor in altering the percentage contribution of the population age group 25-64 to the labour force.) The proportion of the population in the age group 65 and over included in the labour force declined consistently from 25.6 per cent in 1946 to 20.6 per cent in 1954. It is estimated that in 1955, 20 per cent of the population in this age group will be in the labour force and that by 1965 this proportion will further decline to 18 per cent; thereafter, it is assumed that this downward trend will level out.

Note: This table should be read in conjunction with Table A24 showing "Ontario's Labour Force as a Percentage of the Population 14 Year and Over, By Age Groups, 1946-1954."

### APPENDIX III

## Elementary and Secondary School Enrolment and Costs in Ontario to 1975

### ENROLMENT AND COSTS

#### **Enrolment**

Education is and will continue to be for many years one of Ontario's most pressing problems. In the last decade, school enrolment has risen spectacularly. Augmenting the effects on enrolment of a rising birth rate have been the very large numbers of children of school age moving into the Province from other countries and other provinces. In the period 1949-1953, for example, 95,600 immigrant children under 18 years of age came to Ontario, 70 per cent of whom were under 10 years of age. In the same period, the Province registered a net gain of some 24,000 children of school age in exchange of population with other provinces.

Elementary school enrolment, which in 1945 was at a level of 525,000, totalled 821,000 in 1954, an increase of 56 per cent. While so far the increase has pressed with less severity on secondary schools, facilities had to be provided for an additional 39,000 pupils between 1945 and 1954, and this is only the beginning. By the early 1960's, the first of the children of the high-birth post-war years will have reached the secondary school grades. Enrolment in Ontario's secondary schools is then expected to rise at a rapid pace.

The table which follows shows enrolment in elementary and secondary schools in the Province for certain selected years in the period 1900-1954.

Figures for school enrolment in the earlier years of the century are not strictly comparable with those in more recent years. Methods of compilation and definitions of enrolment have changed over time and it may be that some double counting took place prior to about 1937. Despite these limitations,

**Table A28—**  
**Elementary and Secondary School Enrolment**  
**in Ontario, Selected Years 1900-1954**

Year	Elementary School Enrolment <sup>1</sup>	Secondary School Enrolment <sup>1</sup>	Total Enrolment
	(000's)	(000's)	(000's)
1902	454	12	466
1912	467	32	499
1917	527	34	561
1922	601	62	663
1927	600	86	686
1932	580	112	692
1937	562	112	674
1942	527	109	636
1947	564	124	688
1948	585	126	711
1949	616	129	745
1950	635	132	767
1951	678	135	813
1952	735	143	878
1953	783	150	933
1954	821	160	981

(1) June enrolment—day students only. Elementary school figures include kindergarten pupils.

it is clear that current enrolments in both our elementary and secondary schools are at the highest levels in the history of the Province. The number of children attending elementary schools is twice as large as it was in 1900, while in the case of secondary schools, it is no less than 13 times the 1900 figure.

Looking to the future, we can see no relief in sight for those authorities concerned with providing for elementary and secondary education. On the basis of population projections in Appendix I, elementary school enrolment, which in 1955 totalled more than 880,000, could, under favourable conditions, increase by 22 per cent to reach 1,073,000 by 1960; by 1965, it could be as high as 1,278,000. Further

extension of the trend indicates that a level of enrolment some 70 per cent higher than that obtaining today may prevail in 1975, when facilities for as many as 1,499,000 elementary school pupils would be required.

Nor are projected enrolment levels for secondary schools any less impressive. If present trends continue, the enrolment of 170,000 in 1955 could reach as high as 313,000 by 1965 and 440,000 by 1975, when it would be more than two and one-half times its present size.

**Table A29—  
Projected Elementary and Secondary School  
Enrolments to 1975**

Year	Elementary School Enrolment	Increase	Secondary School Enrolment	Increase
1955	880,000 <sup>1</sup>		170,000 <sup>1</sup>	
1960	1,073,000	193,000	246,000	76,000
1965	1,278,000	205,000	313,000	67,000
1970	1,385,000	107,000	396,000	83,000
1975	1,499,000	114,000	440,000	44,000

(1) Preliminary.

Enrolment in the Province's secondary schools in 1947 accounted for 37.9 per cent of those in the age group 15-19. By 1955, the corresponding percentage was about 51.1. This points up an additional complexity in the picture of secondary school population. Not only will an increasing number of school children reach secondary school grades, but an increasingly larger percentage of them will elect to pursue their education for longer periods than in the past. The position is illustrated in the table which follows:

**Table A30—  
Percentage of the Age Group 15-19 Enrolled  
in Ontario's Secondary Schools, 1947-1955**

Year	Age Group 15-19	Secondary School Enrolment	Secondary School Enrolment as % of 15-19 Age Group
1947	327,000	124,000	37.9
1948	324,000	126,000	38.9
1949	322,000	129,000	40.1
1950	320,000	132,000	41.2
1951	315,700	135,000	42.8
1952	320,400	143,000	44.6
1953	324,100	150,000	46.3
1954	332,200	160,000	48.2
1955	339,500	170,000 <sup>1</sup>	51.1

(1) Preliminary.

Some of the factors influencing this trend have been as follows:

(a) The growing economic prosperity within the Province; parents have been better able to finance the continuation of their children's education.

(b) The widening variety of courses offered by Ontario's secondary schools; more varied curricula attract a larger number of students.

(c) The extension of school transportation facilities; this is especially important in rural areas where accessibility is a major factor to be considered.

(d) The increasing emphasis on higher standards of formal education in securing suitable employment; such emphasis reflects significant changes in social patterns.

### Teacher Supply

Since the early part of the century, elementary school enrolment has increased by about 81 per cent whereas, over the same period, the number of teachers employed in elementary schools has risen more than proportionately, actually by some 182 per cent. This trend is reflected in part in the smaller size of classes now prevailing in the Province. In 1900, the teacher-pupil ratio in elementary schools was 1 : 48. The ratio improved to 1 : 33 in the 1930's and to about 1 : 30 in recent years. Similar trends are observed in secondary schools.

**Table A31—  
Number of Full-Time Elementary and Second-  
ary School Teachers Employed in Ontario,  
Selected Years 1900-1954**

Year	Elementary			Secondary		
	Male	Female	Total	Male	Female	Total
1902	2,294	7,073	9,367	483	110	593
1912	1,511	9,246	10,757	633	510	1,143
1917	1,317	11,445	12,762	596	696	1,292
1922	1,740	13,132	14,872	985	1,194	2,179
1927	2,266	14,080	16,346	1,527	1,633	3,160
1932	2,805	14,535	17,340	2,011	2,016	4,027
1937	3,640	13,896	17,536	2,421	1,899	4,320
1942	2,497	14,761	17,258	2,357	2,023	4,380
1947	3,674	15,018	18,692	3,179	2,084	5,263
1948	3,930	15,261	19,191	3,268	2,045	5,313
1949	4,158	15,888	20,046	3,423	2,097	5,520
1950	4,589	16,660	21,249	3,655	2,140	5,795
1951	4,886	17,441	22,327	3,824	2,192	6,016
1952	5,207	18,551	23,758	4,041	2,228	6,269
1953	5,496	19,879	25,375	4,209	2,286	6,495
1954	5,657	20,804	26,461	4,320	2,312	6,632

To cope with the anticipated increases in both elementary and secondary school enrolments, the recruitment of teachers will, of necessity, have to be at a very high level for many years to come. If the present teacher-pupil ratio for elementary schools of 1:30 is to be maintained in the future, an addition of 13,000 elementary school teachers will be necessary between 1955 and 1965 merely to meet the requirements arising from the expected expansion in attendance. Moreover, the problem will be heightened considerably by the need to offset the wastage caused by retirements from the profession.

In 1953, about 1,800 elementary school teachers left the service; of this number, about 31 per cent left to get married, another 28 per cent moved into non-teaching professions, while about 9 per cent retired on superannuation. In recent years, not more than 2,500 newly qualified teachers have been available annually. In 1953-54, for example, an additional 1,700 elementary school teachers were required to staff schools throughout the Province. Allowing for a wastage of some 1,800, this meant that a net addition to the teaching force of 700 was realized. The remaining teacher requirements were met, in part, by the granting of letters of permission—about 50 per cent of such recruits had some form of professional training—and by drawing back into the profession a large number of married women. This was particularly the case in rural areas.

Nor will the recruitment problem of the secondary schools be any less onerous. By 1965, an additional 6,000 secondary school teachers—exclusive of retirements—will have had to be found to cope with the growing numbers of pupils attending these schools.

The introduction of special summer courses for training teachers has gone a long way towards

relieving current difficulties in this field. There is no doubt, however, that, although the Province is “holding the line” on the problem of teacher supply at present, a continuation—perhaps even an intensification—of the current special recruitment efforts will be called for far into the foreseeable future.

## **Elementary and Secondary School Costs**

The costs of elementary and secondary school education have climbed over the past 30 years at a rate sufficiently rapid to cause serious concern to the Province and the municipalities. Between 1920 and 1954, expenditures under this heading were multiplied seven times—the rise was from \$29 million to \$192 million. The eight year period 1946-1954 alone witnessed a tripling of financial requirements for elementary and secondary schools and the end of the upward trend is by no means in sight.

## **DISBURSEMENTS FROM CURRENT FUNDS**

### **Current Operating Costs**

Current operating costs, which comprise teachers' salaries, maintenance charges and transportation costs, account for more than 80 per cent of the annual disbursements on elementary and secondary school education. From a relatively moderate \$41 million in 1939, current costs continued to rise sharply and reached an estimated \$162 million in 1954—a level almost four times that of 1939.

The rise in operating costs has been accentuated

**Table A32—Estimated Number of Additional Elementary and Secondary School Teachers Required to Meet the Needs of Expanding Enrolment (Exclusive of Replacement Needs) to 1975**

Period	Elementary Schools			Secondary Schools		
	Estimated Increase in Enrolment	Teacher-Pupil Ratio	Additional Teacher Needs (Exclusive of Replacements)	Estimated Increase in Enrolment	Teacher-Pupil Ratio	Additional Teacher Needs (Exclusive of Replacements)
1955-1960	193,000	1:30	6,400	76,000	1:24	3,200
1960-1965	205,000	1:30	6,800	67,000	1:24	2,800
1965-1970	107,000	1:30	3,500	83,000	1:24	3,500
1970-1975	114,000	1:30	3,800	44,000	1:24	1,800

**Table A33—Expenditures by the Province and Municipalities on Education,  
Selected Years 1900-1954**

Year	Total Expenditures of Province & Municipalities on Education <sup>1</sup>	Per Capita	Expenditures of Province & Municipalities on Elementary & Secondary Education <sup>2</sup>	Per Capita	Elementary & Secondary Expenditures As % of Total Outlays
1900	\$ 5,630,000	\$ 2.50	\$ —	\$ —	% —
1905	7,776,000	3.40	—	—	—
1910	11,665,000	4.70	—	—	—
1915	17,927,000	6.50	—	—	—
1920	34,322,000	12.00	\$ 28,928,000	\$ 10.10	84.3
1925	50,933,000	16.40	46,321,000	14.90	90.9
1930	54,606,000	16.10	47,303,000	14.00	86.6
1935	47,810,000	13.00	42,648,000	11.90	89.2
1940	54,480,000	14.60	48,898,000	13.00	89.8
1946	71,163,000	17.40	68,409,000	16.70	96.1
1947	87,542,000	20.90	78,818,000	18.90	90.0
1948	104,980,000	24.60	89,844,000	21.00	85.6
1949	113,486,000	25.90	100,081,000	22.90	88.2
1950	128,073,000	28.60	113,021,000	25.30	88.2
1951	156,618,000	34.10	136,420,000	29.70	87.1
1952	179,322,000	37.60	157,588,000	33.00	87.9
1953	195,419,000	39.90	171,434,000	35.00	87.7
1954	215,100,000 <sup>3</sup>	42.60	191,600,000 <sup>3</sup>	38.00	89.1

(1) Comprises current expenditures of the Ontario Department of Education and the municipalities, including annual debt retirement charges; excludes capital outlays from capital funds, and expenditures on education by other departments of government.

(2) Current expenditures of the municipalities, including annual debt retirement charges, plus provincial legislative grants and other payments.

(3) Estimated.

**Table A34—  
Average Salaries of Teachers in Ontario,  
Selected Years 1900-1954**

Year	Elementary		Secondary	
	Male	Female	Male	Female
1902	\$ 433	\$ 279	\$ 1,448	\$ 808
1912	788	543	1,574	1,016
1917	1,038	650	1,892	1,145
1922	1,644	1,117	2,596	1,957
1927	1,667	1,152	2,552	2,186
1932	1,665	1,150	2,606	2,091
1937	1,350	989	2,382	1,921
1942	1,714	1,131	2,581	2,067
1947	2,261	1,654	3,059	2,669
1948	2,443	1,828	3,447	3,041
1949	2,606	1,969	3,444	3,052
1950	2,709	2,092	3,573	3,196
1951	3,037	2,365	4,112	3,691
1952	3,331	2,580	4,421	3,997
1953	3,512	2,723	4,634	4,205
1954	3,624	2,882	4,790	4,344

by factors other than increased enrolment. Wage and price levels have risen almost continuously since the end of World War II. Teachers' salaries, which account for about 70 per cent of operating costs, have risen sharply.

Average salaries of teachers have risen annually

since 1947. Those of male teachers in elementary schools, for example, averaged \$3,624 in 1954—a rise of 60 per cent over the average of \$2,261 in 1947.

Current operating costs have also tended to rise because of continuing demands for extension of, and improvement in, school services. Transportation facilities have been, and are being, augmented and more varied curricula are continually being provided. These are but a few of the factors which have influenced costs and which may be expected to continue to exert pressure on expenditures for education.

### Annual Capital Charges and Capital Outlays from Current Funds

In the 1930's, school building programs in Ontario were slowed on the grounds of economy, while during the subsequent war years, virtually no new school construction was undertaken. In these circumstances, annual capital charges, which in 1939 amounted to \$7.6 million, fell to \$6.3 million by 1946. Since then, however, capital charges have mounted. Between 1946 and 1951, annual repayments of capital loans almost doubled, while between 1951 and 1954, a further rise of

about 73 per cent to \$21.3 million took place. Moreover, in recent years, certain capital outlays have been made out of current funds.

The large capital program currently being

believe that the gross cost per enrolled pupil will continue to rise. We have already drawn attention to the way in which teachers' salaries and the cost of other services are becoming progressively higher.

**Table A35—Capital Charges Pertaining to Elementary and Secondary Schools in Ontario, 1939-1954**

Year	Capital Charges <sup>2</sup>			Capital Outlays from Current Funds		
	Elementary Schools (\$000's)	Secondary Schools (\$000's)	Total (\$000's)	Elementary Schools (\$000's)	Secondary Schools (\$000's)	Total (\$000's)
1939	4,517	3,072	7,589	—	—	—
1946	3,638	2,683	6,321	1,597	569	2,166
1947	4,057	2,619	6,676	1,817	892	2,709
1948	4,163	2,507	6,670	2,795	931	3,726
1949	4,977	3,560	8,537	2,455	1,086	3,541
1950	5,475	4,005	9,480	3,283	1,074	4,357
1951	8,285	4,102	12,387	4,508	1,658	6,166
1952	9,467	5,375	14,842	5,096	2,094	7,190
1953	11,704	5,569	17,273	5,458	1,936	7,394
1954 <sup>1</sup>	14,600	6,669	21,269	5,444	2,485	7,929

(1) Estimated.

(2) Annual repayment of capital indebtedness and interest charges.

undertaken, and which will of necessity have to be extended well into the future, will inevitably raise capital charges to levels much higher than those currently prevailing.

The picture of rising school costs can be most strikingly illustrated by reference to the gross cost per enrolled pupil. In 1939, education authorities were expending \$59.79 per enrolled pupil in elementary schools; by 1954 this cost had almost tripled to \$163.60. The trend is similar for secondary schools.

Looking to the future, there is every reason to

**Table A36—  
Gross Cost per Enrolled Pupil in Ontario's  
Elementary and Secondary Schools,  
1939-1954**

Year	Gross Cost per Enrolled Pupil in Elementary Schools	Gross Cost per Enrolled Pupil in Secondary Schools
	\$	\$
1939	59.79	132.19
1946	84.89	175.70
1947	96.27	211.64
1948	106.66	232.86
1949	113.67	256.72
1950	125.88	274.07
1951	143.23	319.51
1952	151.69	350.46
1953	155.25	354.85
1954	163.60	357.31

We have also noted that annual capital charges are likely to become even more onerous than at present.

If we assume that no further increase in the gross costs per enrolled pupil is to take place in the future, then on the basis of our projections of future school enrolment, the cost of elementary and secondary school education to 1975 will, in all probability, not be less than that shown in the table below:

**Table A37—  
Projected Costs of Elementary and Secondary  
School Education in Ontario to 1975, assum-  
ing 1954 Gross Costs per Enrolled Pupil**

Year	Elementary School Costs	Secondary School Costs	Total Cost of Elementary and Secondary School Education
	(\$000's)	(\$000's)	(\$000's)
1954 <sup>1</sup>	134,400	57,200	191,600
1960	175,490	87,898	263,388
1965	209,122	111,909	321,031
1970	226,527	141,495	368,022
1975	245,155	157,145	402,300

(1) Estimated.

If these conservative assumptions are borne out by events, the Province and the municipalities will be called upon to provide at least \$71 million more for elementary and secondary school education in 1960 than in 1954. By 1965, expenditures of this type will have reached \$321 million, an increase of

67 per cent over the 1954 total. Looking even further ahead, the year 1975 could witness a doubling of the 1954 expenditures. In that year, more than \$400 million may be required for this purpose—a sum greater than the total of all Ontario's current expenditures on ordinary account.

## CAPITAL COSTS

### Capital Outlays from Capital Funds

The magnitude of the problem of providing additional accommodation and facilities for Ontario's future school population can be best grasped by examining the capital construction program undertaken in the last decade.

**Table A38**  
**Ontario's School Building Program,**  
**1945-1954<sup>1</sup>**

Year	Elementary Schools—New and Additions			
	Increased Enrolment	Number of Projects	Additional Pupil Places	Estimated Cost (\$000's)
1945	3,500	53	4,200	1,200
1946	16,900	89	6,500	2,600
1947	10,200	132	11,400	6,100
1948	26,700	155	18,400	10,900
1949	19,700	190	22,500	16,400
1950	23,800	198	27,300	17,500
1951	38,600	241	31,000	21,300
1952	54,400	217	40,740	29,600
1953	52,500	293	44,390	31,800
1954 <sup>2</sup>	53,200	370	56,000	32,100
Totals	292,500	1,938	262,430	169,500

Year	Secondary Schools—New and Additions			
	Increased Enrolment	Number of Projects	Additional Pupil Places	Estimated Cost (\$000's)
1945	6,100	2	210	56
1946	6,900	9	670	303
1947	— 1,100	19	1,490	539
1948	1,300	27	4,240	4,470
1949	3,000	19	4,810	7,577
1950	3,900	29	8,850	13,142
1951	2,200	29	7,020	8,631
1952	6,000	31	10,240	14,240
1953	8,000	43	10,650	16,895
1954 <sup>2</sup>	12,600	57	13,800	17,700
Totals	48,200	265	61,980	83,553

(1) Increased enrolment calculated on September returns.  
(2) Estimated.

Between 1945 and 1954, more than 262,000 additional pupil places were provided in Ontario's elementary schools, necessitating the construction

of, or additions to, almost 2,000 buildings. The estimated cost of these new undertakings totalled \$170 million. While the secondary school building program was not as extensive as that for elementary schools, 62,000 additional pupil places were made available in the period. The 265 building projects involved were estimated to have cost \$84 million. In total, 324,000 additional pupil places were provided in Ontario's elementary and secondary schools at a cost of about \$253 million.

**Table A39—**  
**Capital Outlays from Capital Funds in**  
**Respect of Ontario's Elementary and**  
**Secondary Schools, 1940-1954**

Year	Elementary Schools (\$000's)	Secondary Schools (\$000's)	Total (\$000's)
1940	895	322	1,217
1945	1,477	284	1,761
1946	3,025	529	3,554
1947	6,252	2,179	8,431
1948	10,564	5,836	16,400
1949	16,900	8,212	25,112
1950	19,530	9,628	29,158
1951	26,234	10,257	36,761
1952	30,482	18,342	48,824
1953	33,461	14,329	47,790
1954	38,250 <sup>1</sup>	16,500 <sup>1</sup>	54,750

(1) Estimated.

In projecting future capital expenditures to 1975, it should be borne in mind that we anticipate an accelerated growth in secondary school enrolment. The capital cost of providing an additional secondary school pupil place is currently about \$1,400, as compared with only \$600 for a similar elementary school addition.

The disproportionate capital costs associated with secondary schools are brought into sharp relief in the table which follows. On the basis of our projected school enrolment figures and on the assumption that capital costs remain at their present levels and that there is no greater economy in the use of classrooms, an increase in secondary school enrolment of 76,000 between 1955 and 1960 may well call for capital outlays almost as great as for the 193,000 additional elementary school pupils expected in the same period.

Over the 10 year period 1955 to 1965, we project that capital outlays from capital funds in respect of elementary and secondary schools will approximate \$439 million, of which some \$200 million or

**Table A40—Projected Capital Outlays from Capital Funds in Respect of Ontario's Elementary and Secondary Schools to 1975**

Period	Elementary Schools		Secondary Schools		
	Estimated Increase in Enrolment	Estimated Capital Outlays at \$600 per new Pupil Place	Estimated Increase in Enrolment	Estimated Capital Outlays at \$1,400 per new Pupil Place	Estimated Total Capital Outlays
1955-1960	193,000	115,800,000	76,000	106,400,000	222,200,000
1960-1965	205,000	123,000,000	67,000	93,800,000	216,800,000
1965-1970	107,000	64,200,000	83,000	116,200,000	180,400,000
1970-1975	114,000	68,400,000	44,000	61,600,000	130,000,000

46 per cent will be attributable to new secondary school construction. A further \$310 million may be required to finance school building operations in the decade 1965-1975, of which \$178 million or 57 per cent may have to be allocated to secondary schools.

### **Capital Indebtedness**

Most of the current school building program has been financed by debenture issues. Capital indebtedness of municipalities in respect of elementary and secondary education, which in 1946 was at the relatively low figure of \$44 million, increased by 500 per cent in 8 years. It should be recognized that the real burden of the debt has been by no means as great. Population has increased considerably in the same period and, even more important, the purchasing power of money is, of course, substantially less. Nevertheless, the increase is very significant and in view of the anticipated needs for new school facilities, this trend is expected to continue well into the future.

**Table A41—  
Capital Indebtedness of Municipalities in  
Respect of Elementary and Secondary Schools,  
Selected Years 1900-1954**

Year	\$	Year	\$
1900	4,169,000	1946	43,746,000
1905	5,328,000	1947	56,093,000
1910	10,616,000	1948	68,407,000
1915	27,985,000	1949	83,877,000
1920	40,681,000	1950	108,830,000
1925	67,921,000	1951	144,648,000
1930	86,552,000	1952	176,872,000
1935	79,571,000	1953	217,011,000
1940	73,370,000	1954 <sup>1</sup>	259,228,000

(1) Estimated.

### **CONCLUSION**

In conclusion, this may be said: Population growth suggests that future thinking on enrolment problems must be oriented against the background of the new trends and developments unfolding. Past experience offers insufficient guidance. The school population may be expected to attain levels progressively beyond those which might reasonably have been anticipated even a decade ago. The primary pressure on elementary school accommodation at present arises from the simple fact that more children are being born and must eventually be accommodated in greater numbers of classrooms and buildings. In contrast, currently increased demands for secondary school accommodation arise in large measure because more children are extending their education for longer periods than in the past. Employers are demanding higher standards of formal education and a more varied development of skills. These trends may be explained in part as reflections of changes in the social requirements of a rapidly developing economy. Accessibility to secondary schools, particularly in the rural areas, is being enhanced by an expanding emphasis on school transportation. Again, the generally improved financial status of parents is enabling them more readily to maintain children in secondary schools.

These are but a few of the more significant factors involved, which will be magnified in the future. By the early 1960's, secondary school enrolment problems will have been further accentuated by an anticipated influx from the elementary schools of those children born during the high-birth post-war period.

We have indicated the levels which costs may attain in the future. We do not doubt that financial requirements may well exceed the projected

limits. Under these circumstances, the Province and the municipalities can draw little comfort from the fact that their current outlays of about \$200 million could climb to more than \$320 million by 1965—almost two-thirds higher than present commitments. By 1975, the current burden could be doubled.

No way of avoiding these expenditures has been revealed in our examination of the situation. If our projections approximate reality, then the future problems indicated are unmistakable. Facilities will have to be provided for the increased enrolments forecast. It may well be that, in the future, entirely different methods will have to be evolved.

A further complication of the financial picture stems from the uneven distribution across the Province of the increased enrolment load. The major portion of the additions to enrolment in the post-war period have taken place in southern Ontario, especially in the immediate vicinity of the larger centres of population. The semi-urban areas have absorbed about 43 per cent of Ontario's post-war increment in public school enrolment. It is the southern section of the Province which has experienced the most rapid growth in industry and population. Immigrants have been attracted to it in large numbers and the increasing tendency for people to work in the towns and cities and to find living accommodation on their outskirts is having repercussions on the distribution of the school population.

The point can be illustrated by reference to the Metropolitan Toronto area's experience. A comparatively new township like North York has almost had to begin from nothing in providing certain school facilities. Public school enrolment in this township totalled 3,000 in 1945. At present, no less than 22,000 pupils are straining its public

school facilities. Forty-one new public schools have had to be built to supplement the 12 which were in existence in 1945, and the building of a further 12 is now under way. At present, only three secondary schools are in operation in the township. In direct contrast, public school enrolment in the City of Toronto, which in 1940 totalled 76,500, has actually declined to 64,000 in the current school year. This contrast highlights the variations in the intensity of the problem which exists across the Province.

Paralleling the enrolment problem is the necessity of recruiting sufficient teachers to staff the schools. Over the next 10 years, some 13,000 additional elementary school teachers and some 6,000 teachers for secondary schools will have to be recruited, merely to meet anticipated increases in school population. These totals take no account of teacher requirements to offset wastage. As regards recruitment, school boards will find themselves increasingly in competition with industry and government in their efforts to obtain staff. Problems of location also enter into teacher recruitment. More remote rural areas, particularly in the northern part of the Province, face increasing difficulties in their quest for qualified personnel. There is some reluctance among prospective staff to pursue their careers in overly remote regions. A mitigating influence may be that greater numbers of the population will in the future be found in the age groups from which the teacher supply must normally be recruited.

It is clear that the field of education will continue to produce some of the Province's most pressing problems of administration and finance. These problems will tend to increase in intensity, coincidentally with population growth and industrial and other economic developments, with all of the ramifications such progress entails.

## APPENDIX IV

# University and College Enrolment and Projected Costs in Ontario to 1975

### ENROLMENT AND STAFF

#### Undergraduate Enrolment

Enrolment in Ontario's universities and colleges has shown a greater increase in the last 10 years than in any previous decade. Since the end of World War II, the undergraduate student body has grown by 66 per cent, from about 12,000 to its present total of more than 20,000. In addition, the numbers of graduate students, dealt with in a later section, has risen from about 660 to 2,000.

In 1921, some 9,000 undergraduate students were enrolled in universities and colleges across the Province; a decade later, in 1931, enrolment had grown by 28 per cent to about 11,400. During the 1930's, it remained almost constant, being only 400

higher in 1938. Not unexpectedly, it dropped during the war years, but with the admission of large numbers of war veterans immediately following World War II, the picture was radically changed. Enrolment more than doubled, rising to an all-time high of 27,700 in the academic year 1947-48. It is currently at a level of about 20,000.

While total undergraduate enrolment has grown by some 11,450, or 127 per cent, over the past 34 years, the number of women students has grown more than proportionately. In 1921, there were 1,607 women attending institutions of higher learning, about 18 per cent of the student body. By 1955, they had increased to 5,000—3 times as many as in 1921 and they composed about 25 per cent of the undergraduate population.

**Table A42—Full Time Undergraduate Enrolment in Ontario's Universities and Colleges, 1921-1955**

Year	Male	Female	Total	Year	Male	Female	Total
1921	7,443	1,607	9,050	1931	8,296	3,118	11,414
1922	7,514	1,932	9,446	1932	8,668	3,142	11,810
1923	7,487	1,906	9,393	1933	8,884	3,194	12,078
1924	6,854	1,884	8,738	1934	8,900	3,016	11,916
1925	6,712	2,040	8,752	1935	9,055	2,947	12,002
1926	6,623	2,162	8,785	1936	9,162	2,904	12,066
1927	6,756	2,365	9,121	1937	9,066	2,880	11,946
1928	7,078	2,543	9,621	1938	9,017	2,816	11,833
1929	7,264	2,664	9,928	1939	9,328	2,901	12,229
1930	7,732	2,932	10,664	1940	9,272	3,018	12,290

Year	Male	Female	Total	Veterans	Total Enrolment Exclusive of Veterans
1941	8,676	3,017	11,693	—	—
1942	8,514	3,126	11,640	—	—
1943	8,607	3,127	11,734	—	—
1944	7,972	3,392	11,364	29	11,335
1945	7,953	4,344	12,297	219	12,078
1946	15,508	4,770	20,278	8,460	11,818
1947	20,400	5,448	25,848	15,402	10,446
1948	22,232	5,416	27,648	12,521	15,127
1949	21,029	5,274	26,303	9,221	17,082
1950	18,559	5,120	23,679	5,520	18,159
1951	n/a	n/a	21,268	2,591	18,677
1952	14,971	4,524	19,495	1,042	18,453
1953 <sup>1</sup>	14,673	4,202	18,875	476	18,399
1954 <sup>1</sup>	15,300	4,800	20,100	225	19,875
1955 <sup>1</sup>	15,500	5,000	20,500	136	20,364

(1) Preliminary.

Trends in enrolment in the past decade have been obscured by the flood of veterans enrolled between the years 1946 and 1952. Extraordinary measures were taken to deal with the situation as classes were expanded to accommodate over 27,600 students. As the veterans completed their courses, total enrolment, over the following 5 years, shrank by about one-third, thereafter recovering to 20,500. The number of non-veteran students now enrolled (only 136 veterans remain) is 20,364, an increase of nearly 70 per cent over that obtaining in 1939. In other words, the ordinary or non-veteran enrolment has been growing rapidly since about 1948 and is now at the highest level in the history of the Province. Whereas in 1921 only about 4.6 per cent of the age group 18 to 21 years (generally considered as representative of the undergraduate student body) was enrolled in our universities and colleges, the corresponding proportion in 1955, when only a handful of veterans was in attendance, was 7.5 per cent.

Patently, the increase in non-veteran enrolment between 1921 and 1955 is not wholly attributable to the enhanced numbers of young people in the 18-21 age group. The latter group grew by 75,000, or 38 per cent, between 1921 and 1955. In contrast, non-veteran undergraduate enrolment more than doubled. It is clear that the percentage of the university age group seeking admission to universities and colleges in Ontario has been climbing, especially in the last 7 or 8 years.

**Table A43—  
Percentage of the Age Group 18-21 Enrolled  
as Non-veteran Undergraduates in Universi-  
ties and Colleges in Ontario, Selected Years  
1921-1955**

Year	Number in Age Group 18-21	Non-veteran Undergraduate Enrolment	Non-veteran Undergraduate Enrolment as % of Age Group 18-21
1921	196,700	9,050	4.60
1931	246,100	11,414	4.64
1941	266,500	11,693	4.39
1946	273,300	11,818	4.32
1947	272,300	10,446	3.84
1948	271,100	15,197	5.58
1949	270,200	17,082	6.32
1950	268,000	18,159	6.78
1951	264,300	18,677	7.07
1952	267,500	18,453	6.90
1953 <sup>1</sup>	268,500	18,399	6.85
1954 <sup>1</sup>	271,100	19,875	7.33
1955 <sup>1</sup>	271,800	20,364	7.49

(1) Preliminary.

Care should be exercised in interpreting the trend during those years when veteran enrolment was heavy. For example, in many instances, veterans were accorded preference with respect to university admission and this may have tended to keep the number of non-veteran students at a lower level than might otherwise have been the case.

Some of the factors influencing this upward trend in what might be termed "normal" enrolment have been:

(a) Economic prosperity within the Province. Parents are financially more capable of extending their children's education, while students are, generally speaking, having relatively little difficulty in finding summer and part-time employment.

(b) The greater number of scholarships and bursaries available. The Provincial Government has been instrumental in creating many of these aids to students and gratefully acknowledges the aid from other sources.

(c) The growing demand by industry, government and other sectors of the economy for university graduates. In 1954, 15,000 students graduated from universities and colleges across Canada. This was estimated to be 10,000 short of the demand by the professions, all levels of government, commerce, industry and many other sectors where university graduates are employed. It was also predicted that, by 1965, a "deficit" of 190,000 university graduates will have accrued.<sup>1</sup>

(d) Many employers now insist upon a university degree for positions where formerly such qualifications were not required.

(e) The increasing awareness of the "dollar value" of a university degree.

Looking to the future, we anticipate that the number of undergraduates in our universities and colleges will continue to rise. We have noted that in recent years there has been a trend towards enrolment of a larger percentage of the 18-21 age group. This age group, on the basis of population projections set out in Appendix I, is expected to grow from a total of 271,800 in 1955 to 299,600 by 1960, an increase of 10 per cent. Between 1960 and 1965, a further growth of 80,200, or 27 per cent, is anticipated. Looking even further ahead, by 1975, the undergraduate student body may be drawn from a group as large as 580,600, or more than twice the size of the comparable 1955 group.

In projecting future undergraduate enrolment in Ontario to 1975, we assumed that the percentage

<sup>1</sup> Dr. H. J. Somers, President of St. Francis Xavier University, in a speech to the National Conference of Canadian Universities, June 9, 1955.

of the age group 18-21 attending our universities and colleges will increase from about 7.5 in 1955 to a level of 11.25 in 1965, and that a continuation of the trend will result in undergraduate enrolment accounting for 15 per cent of the university age group by 1975.

A recent study undertaken by Dr. E. F. Sheffield<sup>2</sup>, suggests that under certain assumptions, undergraduate enrolment in Canada could by 1965 be at a level of 11 per cent of the births occurring 18-21 years earlier. Ontario's student population has, in the past, consistently represented a higher percentage of the 18-21 age group than was the case for Canada as a whole.

**Table A44—**  
**Proportion of 18-21 Age Group Enrolled as Undergraduate or Post-Graduate Students in Universities and Colleges in Ontario and Canada, Census Years 1921-1951**

Census Year	Ontario	Canada
	%	%
1921	4.7	3.9
1931	4.9	4.2
1941	4.7	4.2
1951 <sup>1</sup>	8.8	7.2

(1) Includes veteran enrolment.

Assuming that 11.25 per cent of the 18-21 age group will constitute the undergraduate student body in 1965, we anticipate that in another decade, on the basis of our population projections, undergraduate enrolment will have more than doubled from its present level, rising to 42,700. By 1975, if our projections and assumptions (that the ratio of enrolment to the 18-21 age group will continue upward) approximate reality, a further doubling of the undergraduate population will take place. More than 87,000 undergraduates may then be crowding campuses across the Province, as shown in the following table.

From the first two lines of the table, it will be seen that undergraduate enrolment is expected to grow relatively slowly over the next 5 years—an increment of about 7,500 being anticipated in this period. Between 1960 and 1965, the pace of enrolment will quicken and facilities may have to be provided for an additional 15,000 students. The 2 following 5-year periods will bring even faster

<sup>2</sup> Director, Education Division, Dominion Bureau of Statistics.

growth, if our assumptions still hold true. Enrolment may rise by over 44 per cent or about 19,000 between 1965 and 1970 and by a further 41 per cent or 25,000 in the period 1970-1975.

**Table A45—**  
**Projected Full Time Undergraduate Enrolment in Ontario's Universities and Colleges to 1975**

Year	18-21 Age Group	Projected % of 18-21 Age Group Enrolled as Undergraduates	Projected Undergraduate Enrolment
1955 <sup>1</sup>	271,800	7.490	30,400
1960	299,600	9.375	28,000
1965	379,800	11.250	42,700
1970	469,200	13.125	61,600
1975	580,600	15.000	87,000

1) Preliminary.

### Post-Graduate Enrolment

Post-graduate enrolment in Ontario's universities and colleges has grown from a modest 190 full-time and part-time students in 1921 to 2,000 in the current session. Between 1921 and 1940, the growth in this sector was more or less continuous, despite yearly variations in the numbers enrolled. A fall in numbers occurred during the war years, but the influx of war veterans brought about an abrupt rise. Post-graduate enrolment in the Province reached a peak of 2,283 in 1950; it has since levelled off at around 2,000.

**Table A46—**  
**Total Post-Graduate Enrolment in the Regular Session in Universities and Colleges in Ontario (Except Theology), 1921-1955**

Year	Year	Year	Year	Year
1921	190	1933	837	1945
1922	222	1934	869	1946
1923	322	1935	735	1947
1924	396	1936	751	1948
1925	368	1937	792	1949
1926	385	1938	799	1950
1927	419	1939	767	1951
1928	473	1940	753	1952
1929	487	1941	717	1953 <sup>1</sup>
1930	546	1942	662	1954 <sup>1</sup>
1931	633	1943	544	1955 <sup>1</sup>
1932	740	1944	630	1,333

(1) Full time graduate students only; in addition, some 700 part-time graduate students were registered in these years and should be added to the totals to make the statistics in the series comparable.

As the following table shows, Ontario's universities and colleges have hitherto provided facilities for nearly as many post-graduate students as all the other provinces combined.

**Table A47—  
Percentage of Post-Graduate Students<sup>1</sup> in  
Canada Pursuing Their Studies in Ontario,  
Selected Years 1921-1952**

Year	Post-Graduate Students in Canada	Post-Graduate Students in Ontario	Ontario as % of Canada
1921	423	190	44.9
1926	846	385	45.5
1931	1,350	633	46.9
1936	1,586	751	47.4
1941	1,569	717	45.7
1946	2,870	1,463	51.0
1951	4,559	1,939	42.5
1952	4,316	1,911	44.3

(1) Full-time and part-time students.

The enrolment of large numbers of graduate veterans in the period 1946-1952 has tended to obscure the recent upward trend. The point is illustrated in the table which follows.

**Table A48—  
Total and Non-veteran Post-Graduate Enrol-  
ment in Ontario's Universities and Colleges,  
1944-1955**

	Post-Graduate Enrolment Including Veterans	Post-Graduate Enrolment Excluding Veterans
1944	630	628
1945	663	646
1946	1,463	1,236
1947	1,682	1,229
1948	1,900	1,492
1949	2,179	1,590
1950	2,283	1,789
1951	1,939	1,557
1952	1,911	1,753
1953 <sup>1</sup>	1,252	1,202
1954 <sup>1</sup>	1,324	1,303
1955 <sup>1</sup>	1,333	1,319

(1) Full time students only; in addition, some 700 part-time graduate students were registered in these years.

Many of the factors noted in connection with expanding undergraduate enrolment have, in all probability, exerted a similar influence on post-graduate enrolment trends in the past decade. Little guidance is to be found, however, in past experience in this area, as to future trends in full-time post-graduate enrolment. Figures of full-

time enrolment are only available for the past 4 academic years. The numbers appear to be related, however, to the enrolment of full-time undergraduates in the previous year. On this basis, it would appear that full-time post-graduate enrolment since 1951 has averaged about 6.7 per cent of the full-time undergraduate enrolment of the relevant previous years. This compares with a figure of about 5.3 per cent for Canada as a whole.

In projecting full-time post-graduate enrolment in Ontario to 1975, we have assumed that this relationship will remain constant over the period.

**Table A49—  
Projection of Full-Time Post-Graduate Enrol-  
ment in Ontario's Universities and Colleges  
to 1975<sup>1</sup>**

Year	Full Time Post-Graduate Enrolment (6.7 per cent of Full Time Undergraduate Enrolment in Previous Year)
1955	1,333 <sup>2</sup>
1960	1,700
1965	2,600
1970	3,800
1975	5,600

(1) In addition to the figures quoted above, we anticipate that substantial numbers of part-time students will continue in the future to pursue their studies.

(2) Preliminary.

**Table A50—  
Summary of Projected Full-Time Undergradu-  
ate and Post-Graduate Enrolment in Ontario's  
Universities and Colleges to 1975**

Year	Full-Time Undergraduate Enrolment	Full-Time Post-Graduate Enrolment	Total Full-Time Enrolment
1955 <sup>1</sup>	20,400	1,300	21,700
1960	28,000	1,700	29,700
1965	42,700	2,600	45,300
1970	61,600	3,800	65,400
1975	87,000	5,600	92,600

(1) Estimated.

### University Staff

The potential doubling of our university population within the next 10 years raises the serious problem of the provision of adequately qualified staff. The level of academic training is determined to a large extent by the calibre of the teachers that can be attracted to, and retained in, university work. In these days of increasing specialization, 7 years or more of university education tends to be

regarded as a minimum requirement for university staff. The majority of post-graduate students from amongst whom our future lecturers and professors must come are, however, going into private practice, commerce, industry and government. It is

tions, 1,300 additional staff members will have to be recruited between 1955 and 1960. Twice this number will be required to meet anticipated expansion in the student body between 1960 and 1965, while in the 5 year period 1970-1975 no less than

**Table A51—Full-Time and Part-Time Teaching Staff<sup>1</sup> in Ontario's Universities and Colleges, Selected Years 1931-1954**

Year	Arts, Letters and Pure Sciences		Total Arts, Letters and Pure Sciences		Professional Faculties	Total Professional Faculties	Total Full-Time, All Faculties	Total Part-Time, All Faculties
	Full- Time	Part- Time	Full- Time	Part- Time				
1931	567	184	751	425	549	974	992	733
1936	600	299	899	421	707	1,128	1,021	1,006
1941	636	325	961	648	598	1,246	1,284	923
1946	699	512	1,211	775	638	1,413	1,474	1,150
1951	984	577	1,561	820	728	1,548	1,804	1,305
1952	1,004	638	1,642	861	749	1,610	1,865	1,387
1953	1,014	514	1,528	1,012	732	1,744	2,026	1,246
1954	1,088	546	1,634	1,069	793	1,862	2,157	1,339

(1) Exclusive of pre-matriculation staff.

plain to see that unless plans are soon made to reinforce academic staffs, there will be no hope of maintaining adequate standards without denying university admittance to a very large number of students.

Between 1931 and 1954, the number of full-time and part-time staff doubled. The number of full-time staff climbed from 992 to 2,157, while the increase for part-time members was from 733 to 1,339. The expansion in the past decade was more rapid than in comparable earlier periods.

The professional faculties require a higher ratio of staff to students than in non-professional fields. With less than 40 per cent of undergraduate enrolment, in 1954, professional faculties of universities and colleges in Ontario accounted for about 53 per cent of the staff members.

In the past, the ratio of total staff to full-time undergraduate and post-graduate students has been in the ratio of about 1 to 6, although in 1948, for example, when veteran enrolment was heavy, the ratio was as high as 1 to 9. In projecting the number of additional staff that will be required in the future (exclusive of replacements) we have assumed that a ratio of 1 to 6 between teachers and full-time students will be maintained. On this basis, if universities do, in fact, accommodate all of the increased enrolment indicated by our projec-

4,500 may be called for. In addition, provision will have to be made to replace losses to the profession through retirements and other causes.

**Table A52—**  
**Estimated Numbers of Additional University and College Staff (Part-Time and Full-Time) That Will be Required to Meet the Needs of Expanding Enrolment (Exclusive of Replacement Needs) 1955-1960 to 1970-1975**

Period	Estimated Combined Increase in Undergraduate and Post-Graduate Enrolment	Teacher-Student Ratio	Additional Staff Requirements (full-time and part-time and exclusive of replacements)
1955-1960	8,000	1:6	1,300
1960-1965	15,600	1:6	2,600
1965-1970	20,100	1:6	3,350
1970-1975	27,200	1:6	4,500

Implied in these figures of additional staff requirements is the assumption that universities and colleges will admit students in the future on the same basis as at present; further, that all of the anticipated demand for higher education will be met by universities and colleges and that part will not be diverted to junior colleges and technical institutes.

## CURRENT OPERATIONS OF ONTARIO'S UNIVERSITIES AND COLLEGES

### Current Expenditures

Current expenditures of Ontario's universities and colleges almost quadrupled between 1936 and 1954, rising from a level of \$6.2 million in 1936 to \$23.5 million in 1954, or by 279 per cent. Over the same period, total enrolment increased by only 67 per cent, from 12,817 to 21,424. The greatest rise in operating costs has taken place within the past few years. Between 1946 and 1952, current expenditures almost doubled, rising from \$9.6 million to \$18.8 million; since that date, they have climbed even further and in 1954 were \$23.5 million.

**Table A53—  
Current Expenditures of Ontario's Universities  
and Colleges, Selected Years 1936-1954**

Year	Current Expenditures	Total Enrolment (Undergraduate and Post-Graduate Students)	Per Student
1936	6,241,583	12,817	486.98
1941	7,409,653	12,410	597.07
1946	9,582,278	21,741	440.75
1951	16,133,115	23,207	695.18
1952	18,842,971	21,406	880.27
1953 <sup>1</sup>	21,500,000	20,197	1,068.22
1954 <sup>1</sup>	23,500,000	21,424	1,096.90

(1) Estimated; the per student calculations for these years are based on full time enrolments only. For other years, part-time post-graduate students are included.

On a per student basis, current expenditures rose from \$486.98 in 1936 to \$1,096.90 in 1954, an increase of 125 per cent. At present, current expenditures per full-time student are at a level of about \$1,200. As in primary education, wages and salaries account for a major portion (about 70 per cent) of current expenditures.

Staff salaries are now much higher than in the twenties. Annual salaries of full-time assistant professors at the University of Toronto averaged \$3,188 in 1921; by 1931, the average annual salary had fallen to \$3,133. Economy measures introduced during the depression years of the 1930's were partly responsible for a further decline in the average level of salaries paid to full-time assistant professors at the University of Toronto. In 1941, yearly earnings in this category averaged as low as \$2,872. Since 1951, however, the situation has radically altered. In each of the academic years, 1951-52 to 1955-56, improvements in salary levels have been recorded.

**Table A54—  
Average Annual Salaries of Assistant Professors at the University of Toronto, Selected Academic Years 1920-1921 to 1955-1956**

Academic Year	Average Annual Salary of Assistant Professors at University of Toronto
1920-1921	\$ 3,188
1930-1931	3,133
1940-1941	2,872
1950-1951	3,825
1951-1952	4,626
1952-1953	4,728
1953-1954	5,206
1954-1955	5,248
1955-1956	5,437

Over the past 6 years alone, the average annual salaries of the category under review increased by 42 per cent. In addition, the number of appointments of this type has increased. In this connection, it should be noted that full-time staff accounts for the bulk of the total salary bill. Part-time and junior appointments are naturally paid less per year than their full-time counterparts. Wage and salary levels paid to non-academic staff have also risen appreciably over the past few years.

The extent to which current expenditures of Ontario's universities and colleges will rise in the future will depend to some extent upon the solutions adopted to meet the anticipated future demands for higher education. (This problem will be discussed in another section.) If it is assumed, however, that all the increased demand for higher education will, in the future, be met by universities and colleges and, further, that the current cost per full-time student will not rise above its present level of \$1,200, future current outlays on higher education may reach levels not less than those indicated in the table below.

**Table A55—  
Projected Outlays from Current Funds of Ontario's Universities and Colleges to 1975, on the Basis of Assumptions Indicated**

Year	Full-Time Enrolment (Undergraduate and Post-Graduate)	Current Outlays at \$1,200 per Student
1954	21,400	\$ 23,500,000 (\$1,096.90 per student)
1960	29,700	35,600,000
1965	45,300	54,300,000
1970	65,400	78,500,000
1975	92,600	111,100,000

On the basis of our assumptions, current expenditures of universities and colleges in Ontario could reach a level of \$35.6 million by 1960, a figure 51 per cent higher than in 1954. Between 1960 and 1965, current expenditures could rise by at least

provincial grants for current operations rose from \$3.3 million to \$10.5 million, an increase of 218 per cent. Over the same period, total revenues of the universities rose by only 150 per cent. Since the end of World War II, therefore, the Province has

**Table A56—Annual Income and Expenditures of Universities and Colleges in Ontario, 1936-1954**

Year	Current Income <sup>1</sup>							Total Current Expenditures
	From Endowment	Provincial Government Grants <sup>2</sup>	Dominion Government Grants	Municipal Government Grants	Student Fees	Miscellaneous	Total Revenue	
1936	655,500	2,960,200	—	45,000	1,914,900	608,900	6,184,500	6,241,600
1941	710,800	3,462,200	—	49,100	2,169,500	903,200	7,294,800	7,409,700
1946	746,300	3,251,600	988,400	49,300	3,709,800	837,800	9,583,200	9,582,300
1951	913,500	7,541,800	379,700	150,800	5,729,400	1,779,700	16,494,900	16,133,100
1952	938,000	7,784,800	2,318,200	156,100	5,881,100	2,274,700	19,352,900	18,843,000
1953	980,290	9,308,487	2,777,458	174,151	5,983,032	2,679,169	21,902,587	21,500,000
1954 <sup>3</sup>	1,025,000	10,500,000	3,100,000	190,000	6,100,000	3,000,000	23,915,000	23,500,000

Sources of Current Income Expressed as Percentages of Total Revenue							
%	%	%	%	%	%	%	
1936	10.6	47.9	—	0.7	31.0	9.8	100.0
1941	9.7	47.5	—	0.7	29.7	12.4	100.0
1946	7.8	34.0	10.3	0.5	38.7	8.7	100.0
1951	5.5	45.8	2.3	0.9	34.7	10.8	100.0
1952	4.8	40.2	12.0	0.8	30.4	11.8	100.0
1953	4.5	42.5	12.7	0.8	27.3	12.2	100.0
1954	4.3	43.9	13.0	0.8	25.5	12.5	100.0

(1) Board and lodging not included.

(2) In addition to maintenance grants for current operations, the Ontario Government has in the last few years made substantial contributions toward the capital costs and deferred maintenance of the universities. For example, in 1954 the Ontario Government paid to the universities a special capital grant of \$3.0 million and in 1955 special capital and deferred maintenance grants of \$5.7 million. If these amounts be included, the Province's contribution would amount to well over half the total university expenditures shown above.

(3) Estimated.

Source: Dominion Bureau of Statistics, Survey of Higher Education.

a further \$19 million and reach \$54.3 million in the latter year. By 1975, a total of \$111 million would, on our assumptions, be required to meet current outlays, a sum 4 times greater than in 1954.

## Sources of Current Income

### Provincial Government Grants

The Government of Ontario represents by far the largest source of current income for universities and colleges across the Province. In 1954, for example, about 44 per cent of the combined current income of Ontario's institutions of higher learning was voted by the Provincial Legislature. All the major institutions in the Province receive assistance from public funds; the University of Toronto, the provincial university, is granted special consideration in this regard. Between 1946 and 1954, for example,

been contributing an increasing percentage of the total current revenues of universities and colleges. Whereas in 1946, 34 per cent of their current income came from the Provincial Government, the corresponding percentage for 1954 was 44.

Nor is the Ontario government's assistance confined to current operations. In recent years, substantial capital assistance has been accorded to the universities. In the fiscal year 1951-1952, \$2.3 million was voted to institutions of higher learning for capital purposes. Capital grants in the fiscal year 1953-54 were stepped up to \$3.0 million. In the following fiscal year, they totalled \$5.7 million.

### Student Fees

The contribution of student fees to total revenue grew, between 1936 and 1954, by 221 per cent, from a total of \$1.9 million to \$6.1 million. Over the same period, total enrolment increased by 67 per

cent. Despite the fact that student fees have continued to rise, they have accounted, since 1946, for a declining percentage of total revenues. Whereas in 1946, universities and colleges received 38.7 per cent of their income from this source, only about 25.5 per cent was attributable to student fees in 1954. As current expenditures almost equal current revenues, it is clear that student fees have not risen in proportion to the increased costs of operation incurred by universities and colleges. Nevertheless, between 1946 and 1955, for example, student fees for the Arts courses at the University of Toronto were raised on 5 occasions. Similar trends are discernible in the other universities.

**Table A57—  
Student Fees in Arts, at the University of  
Toronto, Academic Years 1946-1947  
to 1955-1956**

Academic Year	Student Fees in Arts
1946-1947	5
1947-1948	203
1948-1949	236
1949-1950	236
1950-1951	239
1951-1952	278
1952-1953	282
1953-1954	340
1954-1955	340
1955-1956	340

Student fees cannot continue to rise, however, without the danger of pricing the cost of higher education out of the reach of those students of more modest means. Although the upper limit to which fees could reasonably be raised may not yet have been reached, this aspect of the financing of higher education will have to be carefully watched in the future.

#### Federal Government Grants

Prior to 1946, the Federal Government did not contribute in any substantial manner to the revenues of our universities and colleges. The admission of large numbers of war veterans in 1946, however, resulted in special payments by the Department of Veterans' Affairs to assist universities.

It was not until 1952, following the publication of the Report of the Massey Commission, that regular grants by the Federal Government to

institutions of higher learning were authorized. The basis of these grants is 50 cents per head of population in each province. In addition, certain other grants are paid to universities by Federal Government agencies for special purposes.

In 1952, Federal Government payments to Ontario's universities and colleges amounted to \$2.3 million, rising to \$3.1 million in 1954. In the latter year, they represented about 13 per cent of the total current revenues of all the universities. As it is anticipated that the number of university students will increase more rapidly than population for some time to come, the present per capita grants will become smaller on a per student basis as time goes by.

#### Other Sources of Income

Government grants (federal and provincial) and student fees together accounted for 82.4 per cent of the current income of Ontario's universities and colleges in 1954. The remaining 17.6 per cent came from endowments, municipal government grants and miscellaneous sources. Income from endowments has been declining in relative importance over the past quarter of a century. This trend is of special significance to certain of the smaller endowed universities. In 1936, some \$656,000, or 10.6 per cent, of overall current revenues came from this source. Although, in dollar terms, endowment income increased by 56 per cent to a level of \$1,025,000 in 1954, it then represented only 4.3 per cent of total revenue.

The contributions of municipal governments have been of relatively minor importance, although very welcome to the universities. They have consistently represented less than one per cent of current revenues. In 1954, about \$190,000 was appropriated by municipalities for this purpose. It is recognized that the universities also benefit considerably from exemptions from municipal taxation.

#### CAPITAL EXPENDITURES

Over the 10 year period 1936-1946, capital expenditures amounted to about \$4 million; in contrast, in the 6 year period 1946-1952, they were of the order of about \$35 million, or 8 times as great. In fact, the value of the plant of our universities and colleges doubled between 1946 and 1952—expanding from \$35.1 million to \$70.7 million. The development is illustrated in the table which follows.

**Table A58—**  
**Value of Plant of Ontario's Universities and Colleges, Selected Years 1936-1952**

Year	Value of Plant <sup>1</sup>
	\$
1936	31,443,000
1941	33,645,000
1946	35,161,000
1951	60,284,000
1952	70,668,000

(1) Site, buildings and equipment.

Very little capital construction was undertaken during the 1930's and the war years and this is now having serious repercussions on our universities and colleges. Although figures of capital expenditures for years later than 1952 are not available, it would appear that the increased activity noted in this field since the end of World War II is continuing.

A discussion of future capital outlays can only be put into proper perspective by reference to the methods that may be adopted to meet the anticipated heavy increase in university and college enrolment. As yet, university authorities have given no definite indication as to how they are likely to proceed.

It has been suggested that universities and colleges will be more selective in the future and will raise admission standards. A 3-year study into aptitude tests is now being conducted by the Department of Educational Research of the Ontario College of Education, but the results will not be known until late 1958 or early 1959. It would be very difficult indeed to deny to large numbers of our young people the opportunity to attend university. The potential demand for higher education in the future may be very great. Even now there is a very serious shortage of university graduates, and public opinion may compel the universities to accept a larger number of students than they would otherwise wish to do.

Some educators have advocated the establishment of junior colleges. Colleges of this type would give tuition equivalent to that provided in the first 2 years of university training. Graduates of junior colleges could then either go on to university and gain a degree or terminate their education at the former stage. In this manner, it is hoped that the universities would be relieved of some of the pressures on them. In addition, the opportunity would be provided to students who did not wish to continue their education further, or who were

not up to university standards, to terminate their formal education at completion of junior college.

The capital costs of junior colleges would be smaller than that of universities, but they operate under a number of undeniable handicaps.

The establishment of technical schools providing courses more advanced than those available in vocational schools would also be cheaper than university facilities and in this case graduates would be qualified immediately to take their places in industry, whereas those from junior colleges might require further training. It is not our intention to pursue this subject further here, other than to add that while both these alternatives, and perhaps particularly the latter, may to a degree ease the pressure on the universities, it will not alter the basic fact that the universities must be greatly expanded. Thus, since it appears that the bulk of the demand for higher education will have to be met by the universities, we consider that our projections of enrolment are not unreasonable. It is indeed possible that future enrolments and costs will exceed our estimates, notwithstanding the possible establishment of technical institutes or junior colleges or both.

In short, there appears to be no logical alternative to expansion of facilities in the higher educational institutions, although the degree of such expansion will be conditioned by many factors. Substantial economies in the use of space may indeed be realized by a rearrangement of teaching schedules and university terms to secure more complete year-round operation. On the other hand, a relatively larger proportion of students may in the future seek admission to the science and professional faculties and it is in these sectors that facilities are in the shortest supply and the most expensive to build and equip.

The urgent need for these facilities was brought out in a recent speech by Lewis L. Strauss, Chairman of the U.S. Atomic Energy Commission, in the following comments regarding the shortage of trained scientific and technical personnel in the United States:

"We do know with certainty that we are turning out less than one-half the number of scientists and engineers we require—an alarming statistic by itself. You may have noticed that, each Sunday, from 6 to 10 pages of the metropolitan press are filled with advertisements attempting to enlist scientists and engineers to fill waiting jobs. These advertisers are for the most part the industries to which we look for the tools and weapons of our defense."

"Inevitably our shortage of scientific manpower will become worse before we can do anything to correct it. This is an inescapable fact."

He went on to say:

"Where is the answer to this challenge to be found? Where are we to obtain the trained men to replace the present personnel in our laboratories and science faculties and industries as they retire or pass away, and to fill the expanding demand in every field for more and more scientifically trained people? The trouble does not rest, I think, at the end of the line of training, that is to say in our colleges and universities. They cannot create the candidates for these posts without the human material to start with. The difficulty lies more deeply in our educational system. Our graduate institutions cannot supply the scientists and engineers we need, if students do not come to them, ambitious to be scientists and engineers and possessed of adequate high school preparation for such careers. The decisions that produce our skilled scientists and technicians are made, in the main, before they arrive on the college campuses.

"Only about 16 per cent of the high school graduates entering college last year enrolled in engineering courses—or about 66,000 of them. That is not an entirely gloomy statistic, because the ratio has been going up, slowly but steadily, since 1950 and is expected to hold fairly steady around that 16 per cent for several years to come. However, this must not be construed to mean that we will have 66,000 or more graduate engineers each year. Attrition, on the basis of our experience, will take a heavy toll. More than half of these 66,000 young hopefuls will flunk out along the way, or switch to other, easier courses. Ask the deans of our engineering schools for the reason and a composite of their answer is: 'poor high school preparation in science and mathematics'.

"Our high school systems—or, to be more accurate—you and I—are failing in our obligation to our national welfare and security. We fail when we squander the most valuable of our natural resources. Our youth is not being exposed to the excitement and challenges of science. We are not equipping the growing generation to protect or even to fully enjoy their modern heritage."

Future building costs will be influenced by the ratio of enrolment between professional and non-professional faculties. The table which follows shows the enrolment of full-time undergraduate students in the regular sessions of Ontario's universities and colleges, by faculty, for selected years, 1931-1955. We have further subdivided enrolment by faculty into two groups. Group A is intended to represent those faculties where additions to plant would be less costly than those shown in Group B. This breakdown is purely arbitrary and, we have no doubt, could be considerably improved upon.

In 1955, about 36 per cent of the undergraduate enrolment was in the more costly faculties (Group B). Between 1931 and 1955, however, enrolment in the more expensive Group B faculties increased by 75 per cent, as against an increase of only 50 per cent in the less costly (Group A) faculties. Expressed in another way, undergraduate enrolment in arts, sciences, letters and philosophy for example, increased by 39 per cent, while that in engineering and applied science rose by no less than 119 per cent.

The industrial expansion which is taking place within Ontario and Canada may, in the future, call

**Table A59—**  
**Enrolment of Full-Time Undergraduate Students in the Regular Sessions of Ontario's Universities and Colleges, by Faculty, Selected Years 1931-1955<sup>1</sup>**

Group A	1931	1941	1950	1955
Architecture	—	—	234	186
Arts, Sciences, Letters and Philosophy	5,387	5,408	11,083	7,480
Commerce	222	183	684	938
Education	382	256	327	470
Household Science	745	200	212	201
Journalism	—	—	—	64
Law	249	252	757	1,044
Librarianship	28	15	49	43
Music	—	—	—	100
Nursing Degree	107	172	316	548
Physical and Health Education	51	37	292	234
Secretarial Science	—	—	—	79
Social Work	70	68	115	140
Theology (Including Graduates)	938	940	1,192	620
Other	—	—	—	139
<b>Sub-Total</b>	<b>8,179</b>	<b>7,531</b>	<b>15,261</b>	<b>12,296</b>
<hr/>				
Group B				
Agriculture	391	573	685	393
Dentistry	220	225	566	428
Engineering and Applied Science	1,506	1,708	3,947	3,301
Forestry	62	42	251	106
Medicine	1,321	1,234	1,872	1,722
Optometry	—	—	—	24
Physiotherapy	56	174	196	268
Pharmacy	250	186	325	318
Veterinary Science	97	196	433	291
<b>Sub-Total</b>	<b>3,903</b>	<b>4,338</b>	<b>8,275</b>	<b>6,851</b>
<b>Total, Groups A and B</b>	<b>12,082</b>	<b>11,869</b>	<b>23,536</b>	<b>19,137</b>

(1) Figures of total undergraduate enrolment quoted in the table do not agree in all instances with corresponding figures noted elsewhere in this report. This is due to certain technical difficulties in reconciling total enrolment with enrolment by faculty. The functions and composition of the various faculties have also undergone considerable change over the period.

for a relatively larger number of graduates from the professional and technical faculties than from the Arts, although indications are that a substantial number of the latter class will also be needed. Unless economies are realized in other directions, the emphasis on technical and professional training may cause building costs to rise proportionately more rapidly than enrolment.

A number of our larger universities were recently asked to supply estimates of their future capital requirements. On the basis of replies received and after making allowances for replacement and other

capital costs, we estimate that, over the next 10 years, capital requirements will range from between \$75 million to \$100 million. These estimates could be higher than those indicated if new universities are envisaged.

It may be of interest to note that in a recent study made by a special committee considering similar expansion in another area, it was the committee's opinion, on preliminary consideration, that capital costs for new construction and equipment for a hypothetical college of 1,000 students in the arts and sciences, or closely allied fields, would be

\$4.5 million. The basis of this calculation was 180 square feet per student at \$20 per square foot for an academic building, giving a cost of \$3.6 million, plus furnishings and equipment estimated at an additional 25 per cent, or \$0.9 million. If all the anticipated increase in enrolment (undergraduate and post-graduate) to 1965 were housed in new buildings of the arts and science type, capital construction costs in Ontario would, over the next 10 years, approximate \$106 million. However, a more effective use of existing facilities could result in a substantial saving.



## APPENDIX V

# Water and Sewerage Needs In Ontario, 1955 - 1975

### INTRODUCTION

Several factors have contributed to the present high demand for municipal water and sewage works in Ontario. The Province is in the midst of an unprecedented growth in population and industrial expansion. The concentration of this growth in urban rather than rural sections has intensified the problem. A marked backlog of construction programs resulting from the depression period of the thirties and the restrictions of the war years has greatly added to the need for water and sewerage utilities. This demand is at an all time high and is expected to continue at a high rate for many years.

### WATER WORKS NEEDS

The capital expenditure on municipal water works for the next 20 years is estimated to be \$1.1 billion. This includes water distribution systems, purification plants and supply works of all kinds. It is for new systems, extensions and rehabilitation of old ones, and for bringing water supplies from distant points to the local distribution systems.

Water supply is the prime utility for urban development and industrial progress. No community can attain modern standards of living or offer attractions for growth and advancement unless it can be assured of an adequate supply of satisfactory water to meet all requirements. Water supply is a key to municipal and industrial progress.

Ontario communities are striving to secure water services. Small centres of 500 population and over are installing new systems, while existing systems are being extended as never before to provide

water to expanding urban areas. New subdivisions adjacent to urban communities must have public water works for the protection of health and for good standards of living. The present demand for water is a reflection of the province-wide growth and the recognition of water as a basic need for community growth and welfare.

Water resources adequate to keep up with demand are a major concern today. Municipalities and industry obtain water from underground and surface sources. The latter includes inland lakes and rivers, and the Great Lakes system. Since early days, ground water has been an important source for inland areas. The growth of urban centres and the greater demands for water have necessitated additional water supplies to ensure continued growth and prosperity.

Ground water has the advantage of being inexpensive and requiring little treatment. It is favoured for small communities. Where large quantities are required, the cost is increased by exploratory charges and by lengthy supply mains. In some parts of the Province, the quality is impaired by chemical ingredients such as lime, iron, sulphur or salt. Ground waters are quite inadequate in many places and means must be adopted to tap other sources.

Inland streams and lakes are adversely affected by the growth of the country. Spring floods are not retained on the land but are carried away quickly, and summer flows are reduced to a trickle. These streams must also carry away community and industrial wastes. These affect the water even if extensive treatment is provided. Algae growths occur and tastes of various kinds may be difficult to combat.

The average rainfall in Ontario ranges between 25 and 38 inches. If sufficient storage capacity were

available to hold this water on the surface or underground where it falls, the water supply problem would be greatly minimized. Ontario has taken progressive action in the creation of conservation dams and lakes. These react against flood waters in the spring and increase the stream flow in summer. In deep storage ponds, the water remains cool and algae growths are retarded. Such ponds simulate lakes, and suitable locations for such large areas are few. The present type of storage dam is satisfactory in many ways and provided there are a sufficient number of these, they have great value as water sources. The cost of these storage dams is fairly high, and there is always the probability of having to replace them because of silting, unless extensive reforestation is carried out and ground cover provided on the watershed. Long pipe lines from these impounded water supplies are needed to avoid the effects of pollution in the streams.

Municipalities situated on the Great Lakes have a distinct natural advantage. The supply of water is adequate to suit all needs; the water is cool and attractive in quality. While in Ontario there are many areas where a shortage of water exists, most of these are within pipe line reach of the Great Lakes. For example, south-western Ontario may be regarded as a peninsula jutting out into the Great Lakes, with no point more than 55 miles from one of the lakes. Pipe lines are costly to install, but the potentialities for growth and development outweigh this. South-western Ontario has tremendous possibilities if water supplies can be assured.

Few inland municipalities in Ontario can be said to have adequate local water resources for both the present and the future. Ground water is limited, and there is little inducement for major expansion in population and industry. Some rural areas suffer greatly from water shortage. Wells and ponds go dry in extended dry periods and livestock suffer. Irrigation water is in short supply almost everywhere at the critical growing period.

In Ontario, there are 160 municipalities without municipal water systems for domestic or fire service. These require new systems of supply and distribution and assured supplies of acceptable water. In the larger centres where surface waters are used, purification works are required, as well as long feeder mains to bring water to the ever-expanding borders of these water areas. This problem grows rather than diminishes.

At present, the major water problems are arising in two ways, one involving supply and the other distribution. Population growth tends to concentrate around the larger urban centres. This requires extension of feeder mains from the existing system or a new source of supply. Many new subdivisions are being developed to supply housing either for the larger cities or for new industrial developments. In both cases, water requirements are a major concern. This water must come from existing systems, or new intakes, purification works and feeder mains from the Great Lakes or similar sources of supply must be built. At present, the greatest problem is involved around these rapidly expanding urban communities.

In addition to these larger centres, there are municipalities which have not been able to obtain water of satisfactory quality or of adequate quantity to permit growth and extension. These places have smaller populations but, given adequate water resources, there is no reason to think they will not grow rapidly in the near future. South-western Ontario is the part of the Province which at present is in the most critical condition for water supply.

## SEWAGE WORKS NEEDS

The capital expenditure on municipal sewage works is estimated for the next 20 years to be \$1.3 billion. This will include the construction of lateral sewers, trunk lines, sewage purification works and outfall sewers. This expenditure will involve new systems and extensions and modifications of existing systems. Particular emphasis must be placed on the need for sewage treatment to protect streams and to ensure the protection of public health.

Sewerage programs have been delayed to a greater extent than water works. It is the general procedure for a municipality to build a water works system first and follow that some years later by sewers. Thus, there is a considerable backlog in many municipalities today and it is expected that municipalities now having water works will embark on the construction of sewers in the next few years. This program will provide these facilities to the small municipalities as well as provide services for the rapidly growing larger communities. In the depression years, municipalities were unable to finance the construction of sewage works. During the war, materials were not available. It was not until 1949 that materials and

contractors were available for carrying on these programs at a desirable level. This delay has been felt particularly in sewage treatment, and many municipalities today do not have sewage treatment works even though they have sewer systems. The program in the next few years must deal with this situation.

In the Province of Ontario, there are 262 municipalities with sewer systems, in comparison with 395 municipalities having water works systems. Likewise, there are 69 municipalities operating sewer systems that do not have treatment plants. Many other municipalities need enlargement or reconstruction of existing sewage treatment works. For the construction of sewage treatment plants as well as trunk sewers leading to them, an expenditure of approximately \$210 million will be required in the next 5 to 10 years. This is separate from the normal extension of lateral sewers for these systems.

Sewerage needs have been greatly accentuated by the industrialization that is taking place in the Province. New industries bring greater populations to the urban centres. New municipalities or new areas are coming into existence because of industrialization. All of this means an urgent demand for sewage works. The need for sewers and sewage treatment is second only to the need for water. In many of these communities, the local conditions do not make it possible to utilize individual septic tanks and sewers must be installed at the beginning of the development.

Another factor which creates a need for expenditures on sewage treatment facilities is the concentration of population in the urban centres which in turn extends these areas far inland from the Great Lakes and major rivers. This means that there is less opportunity for utilizing dilution as natural purification. Accordingly, a higher degree of treatment of sewage and all industrial wastes is mandatory. This cost is increased approximately 100 per cent over that for primary treatment. The time has arrived when practically all municipalities, unless they are situated on very large bodies of water, will be obligated to build secondary or complete treatment works at greatly increased cost. This delayed treatment program must be met within the next 5 to 10 years.

In the construction of sewage treatment plants, it is always desirable to carry the outfall into a large body of water. Thus, wherever communities are within reach of the Great Lakes or a large river, it is essential to build trunk outfall sewers to reach

that water for dilution purposes. This is one way of protecting the quality of inland streams. There will be an increasing demand for these major trunk outfalls as the inland centres develop. Industrial wastes are another adverse factor, in that many of these are difficult to treat, and reliance must be placed on dilution to a great extent. As industrialization expands inland, the need for major trunk outfalls becomes more urgent.

Sewerage programs cause major problems today in many of the larger centres. When main sewers must be extended rapidly, because of population growth and industrial expansion, the construction of sewage treatment works and trunk sewers must keep pace with that development. Thus, as the population concentrates in large metropolitan areas, the problem of providing sewage works becomes greatly intensified. This is one of the serious problems today. The other is the need for a higher degree of treatment in those inland municipalities where small streams must be utilized as outlets. Such streams as the Grand River and the Thames River show examples of the difficulties involved because of the growth of municipalities and the low stream flows during the summer months. The problem of sewage and industrial waste disposal is more acute in southern Ontario than in any other place in the Province. It may be expected to continue and to require heavy expenditures in the near future.

## SUMMARY AND CONCLUSIONS

The intensive development of the Province, particularly southern Ontario, has created major water supply and sewage works problems. It is essential that steps be taken to ensure adequate water resources for the future, and this will require high expenditures on sewage and industrial waste treatment as well as outfall sewers. The expenditures estimated for these projects during the period 1955-1975 has been estimated as follows:

(a) Water works projects—	\$1,100,000,000
(b) Sewage works projects—	\$1,300,000,000
Total— \$2,400,000,000	

Probably 60 to 65 per cent of these expenditures will be required in the next 10 years if these programs are to go forward as they should and keep pace with the changes that are taking place in the Province.

**Table A60 - Estimated Water and Sewage Works Expenditures, Ontario 1955 - 1975**

**1. Water Works Approvals During the Past Five Years**

Year	No. of Certificates	Total Expenditure	Per Capita
1950	362	\$13,316,701	\$3.16
1951	346	18,049,853	4.17
1952	404	17,633,253	3.92
1953	572	24,491,459	5.29
1954	608	38,100,237	7.85

**2. Sewage Works Approvals During the Past Five Years**

Year	No. of Certificates	Total Expenditure	Per Capita
1950	464	\$17,642,243	\$4.19
1951	423	18,007,055	4.16
1952	439	15,996,533	3.56
1953	574	28,106,635	6.05
1954	650	87,899,341	18.19

**3. Estimate of Ontario Population**

1955	5,183,000
1960	5,863,000
1965	6,555,000
1970	7,314,000
1975	8,184,000

**4. Estimate of Water Works Expenditures During the Next 20 Years**

Basis "A"—Yearly total of \$30 million x 20 = \$600 million  
 Basis "B"—Per capita rate of \$6.00 on average population for 20 years: \$6.00 x 6.6 millions x 20 = \$792 million  
 Average, say \$700 million  
 For feeder pipe lines, pumping installations, irrigation feed lines, etc. \$400 million  
 Total \$1,100 million

**Water Works Expenditures Includes the Following:**

1. Intake Pipes
2. Wells
3. Purification Works
4. Distribution system within municipality
5. Pipe lines from any source (Great Lakes, conservation lakes, etc.).

Expenditure does not include maintenance, operating or service connections.

**5. Estimate of Sewage Works Expenditures During the Next 20 Years**

Basis "A"—Yearly total of \$60 million x 20 = \$1,200 million  
 Basis "B"—Per capita rate of \$10.00 on average population for 20 years: \$10.00 x 6.6 million x 20 = \$1,320 million  
 Average, say \$1,300 million

**Sewage Works Expenditures Includes the Following:**

1. Sewage system within municipality
2. Treatment plants and feeder mains
3. Trunk outfall mains.

Expenditure does not include special installations for industrial wastes, which are difficult to handle and which should be undertaken by industry.

**6. Preliminary Pipeline Surveys by the Ontario Water Resources and Supply Committee**

Preliminary engineering surveys are being undertaken in Essex, Kent and Elgin counties. The following three projects are being studied in these surveys:

- (1) A pipe line from Lake Erie to supply the towns of Essex and Harrow and adjacent areas. In addition, a project for supplying irrigation water to the irrigation area of southern Essex.
- (2) A pipe line from Wallaceburg to Dresden and the adjacent area. Wallaceburg has a surplus capacity of water secured from the Great Lakes System; Dresden is in a desperate position with regard to water.
- (3) A pipe line from Lake Erie to St. Thomas and the adjacent area. In addition, an alternate proposal will consider carrying on the pipe line to the London area.

Engineering survey cost estimates have not been completed on the above and, therefore, accurate figures are not available. Preliminary Committee estimates for the above projects are as follows:

1. Pipe line to Essex and Harrow	\$1,000,000
2. Pipe line to Dresden	450,000
3. Pipe line to St. Thomas (London extension would be extra)	900,000
<b>Total</b>	<b>\$2,350,000</b>

## APPENDIX VI

# Ontario Agriculture

### INTRODUCTION

Ontario agriculture has developed rapidly in recent years, but in the struggle for improved living amenities, many farm operators have found it difficult to make all the necessary adjustments called for by drastically changing economic conditions. This adjustment involves reducing the number of farms, mechanizing all possible operations and continuously searching for improved techniques of production and marketing. The search is creating a need for greatly increased services.

The income available for farm family living rose during and immediately after the war. In this period, with the aid of good crops, net farm income<sup>1</sup> on Ontario farms rose from \$132.2 million in 1940 to \$558.2 million in 1951, or about four times. At the same time, the consumer price index rose from 65.7 to 113.7, or not quite double, and hence farm operators had an opportunity, with favourable prices plus favourable provincial policies, to replace old equipment, repair buildings and go a long way towards catching up with urban standards of living.

Since 1951, the farm picture has not been so happy. Farm net income has dropped from \$558.2 million to \$381.1 million, or over 30 per cent. Since farm operators were not willing to give up their higher standard of services and living, many adjustments in operation are necessary to maintain

<sup>1</sup> Farm Net Income in Ontario from 1940 to 1954 was as follows:

1940 — \$132.2 million	1948 — \$426.9 million
1941 — 170.3 million	1949 — 458.6 million
1942 — 263.4 million	1950 — 461.8 million
1943 — 246.0 million	1951 — 558.2 million
1944 — 289.0 million	1952 — 447.6 million
1945 — 318.3 million	1953 — 434.1 million
1946 — 339.0 million	1954 — 381.1 million
1947 — 318.8 million	(prel.)

the new higher level of cash needed. This is complicated by the fact that the majority of Ontario farm operators have commenced operation since 1945. This means that for many the adjustments must come on top of the normal problems of financing a new farming venture.

Rapid industrial development has meant rapidly rising wages, easily secured employment in industry and a steadily rising demand for farm products. Rising wages and employment have made Ontario a high cost area agriculturally. They also have had some effect in eliminating a few farms from competition but their effect is felt only when the production of a particular enterprise is adjusted to domestic demand. The effect of an increasing demand for agricultural products will occur first in those products which are bulky and must be delivered fresh, such as fluid milk, fruits and vegetables. The population of Ontario rose rapidly from 3,747,000 in 1940 to 5,183,000 in 1955, or over one-third. This increase has been reflected in increased consumption and in a gradual shift in Ontario production into produce required for the fresh bulky trade, where prices are better because of more limited competition.

The more concentrated farm products can be economically shipped long distances, thus Ontario producers derive less advantage in their production. A majority of Ontario farmers are producing these products and so are feeling the effect of higher costs with the more limited advantage of increased markets. For these producers, the effect of increased consumption is manifested more in the assurance of markets and the possibility of better control as exports become less important and home consumption more so. These producers will find relief from their problems mainly through re-organization of their farm units and their production methods, along with a number of market-

ing developments. In the past, local adjustment to changed conditions usually followed the methods adopted by the more successful farmers in the area. Now, it is the more successful farmers who are looking hardest for new methods of solving their difficulties. This situation calls for a whole new area of research to provide the necessary factual basis for adjustment and for a greatly expanded advisory service to acquaint the individual farmer with sound solutions for his problems.

### THE FARM LABOUR FORCE

As about twice as many boys are born on farms in Ontario as can hope to find farms to operate, the agricultural economy is very sensitive to shifts in the rate of industrial development. When industrial employment is low, there is a tendency for mature sons to stay on the farm and to seek an income through some intensification of the farm enterprise. When industrial employment is high, the mature sons tend to move into industry. Then, the farm operator will have to find ways of mechanizing the farm, select enterprises with less work involved, and organize the farm unit as a more profitable operation, in order to earn higher wages; if these methods fail, he may even abandon his farm. The extent to which all of these adjustments have been taking place is revealed in the current statistics.

There has been a large drop in the Ontario agricultural labour force. The total number working in agriculture in this Province decreased from 353,000 in August, 1946 to 277,000 in August, 1955. This sharp decrease occurred at the same time that an increase was taking place in the physical volume of production on Ontario farms. During this period, agricultural workers (including farm operators) dropped from 21 per cent of the total labour force to 13 per cent. This decrease in the agricultural labour force included many former farm operators. The farms (and operators) reported in the Census dropped from 178,204 in 1941 to 149,920 in 1951.

### FARM WAGES

Farm wages have risen relatively more than industrial wages because employment in industry has been easier to obtain and farm wages have had to rise to levels more nearly comparable with industrial wages, in order to retain the minimum number of workers necessary to staff the remaining

farms. Farm wages in Canada have gone up over 4 times since 1910—more than any other item of farm costs.

**Table A61—  
Average Wage of Male Farm Help in Canada,  
January 15, 1940-1955**

Year	Average Wage, per Month with Board	Year	Average Wage, per Month with Board
	\$		\$
1940	19.81	1948	70.00
1941	22.65	1949	74.87
1942	30.26	1950	69.00
1943	40.85	1951	75.00
1944	50.99	1952	86.00
1945	55.61	1953	87.00
1946	57.24	1954	88.00
1947	63.29	1955	85.00

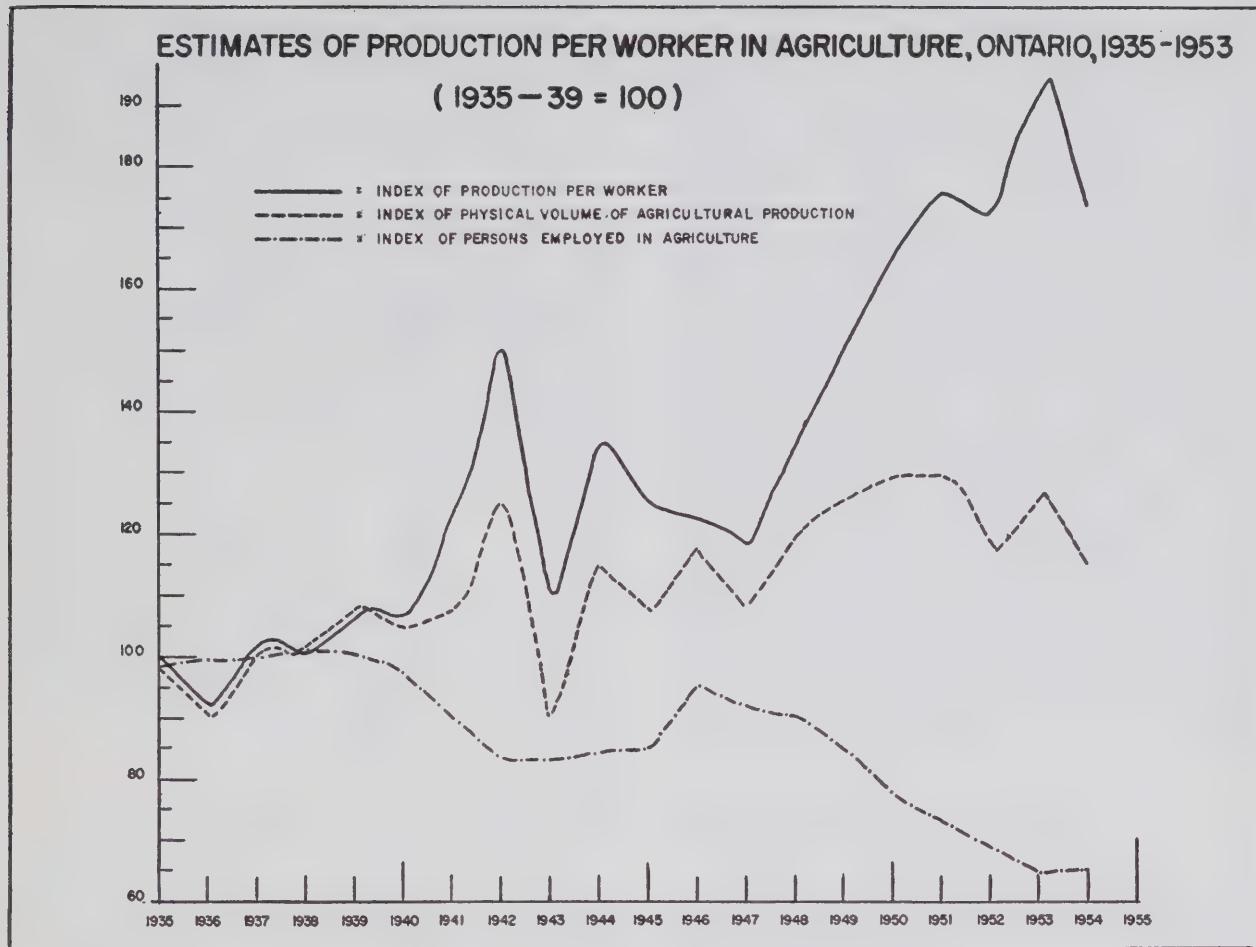
Newfoundland is excluded in all years.

### OUTPUT PER MAN

In 1954, there were only 73 per cent as many agricultural workers as pre-war in Ontario. The physical volume of production was 28 per cent higher. Thus, the output per agricultural worker was 75 per cent higher in Ontario in 1954 than pre-war. Factors affecting this increased output included mechanization, more liberal use of fertilizers, larger farms and the abandonment of some low productivity farms.

### MECHANIZATION AND ELECTRIFICATION

The outstanding trend in Ontario agriculture at present is the trend toward mechanization. This is a logical outcome of the fact that, while labour costs have increased over 4 times since pre-war, the cost of machinery, gas and oil has less than doubled in that period and hydro-electricity has declined in cost. If a farm operator can arrange the financing, the mechanizing of field operations can be carried out by the purchase of a tractor and other appropriate machines. No such complete mechanizing of livestock chores is possible, even if the finance is available. However, much of the drudgery has been removed from chores and the process of improving living standards has been greatly aided by the hydro-electric policies of the Province. From 1929 to 1944, rural electricity rates in Ontario were reduced by more than half. There is a government grant-in-aid of up to 50 per cent of the capital cost of lines and equipment used for distributing electricity in rural operating areas. This has resulted in electricity becoming available



to most of the farms in Ontario. The number of farms using hydro in 1954 was nearly two and a half times the 1944 total.

**Table A62—  
Farms Using Hydro-Electricity in Ontario,  
1944-1954**

Year	No. of Users	Year	No. of Users
1944	59,639	1949	102,786
1945	65,141	1950	114,725
1946	79,285	1951	123,434
1947	78,990	1952	129,451
1948	88,754	1953	133,522
		1954	136,013

Note: In 1944, the average monthly use was 167 kilowatts.  
In 1954, the average monthly use was 347 kilowatts.

Not only has the number of farms using electricity risen sharply, but the average consumption per farm outlet has risen from 167 kilowatts per month in 1944 to 347 kilowatts in 1954, or more than double. Since the only reason for increased use is increased equipment to use it, the whole supply per farm of electricity-using equipment must have doubled in that period.

The extent to which field mechanization has progressed is indicated by the number of tractors acquired between 1941 and 1951. In 1951, there were 105,204 tractors in use in the Province, an increase of 297 per cent over the 35,460 in use in 1941.

decline in the number of horses has been a contributing factor in the increase in the physical output of our farms, by freeing many acres for the production of saleable products. This is particularly important in Ontario, where 70 per cent of the farm cash income is derived from animals or animal products. For the whole of Canada, including Ontario, this figure is only 48 per cent. Based on animal units, the decline in the number of horses could account for a 10 per cent increase in the amount of saleable products in Ontario. Improved practices have been found in Ontario to be associated with improved and more timely cultivation, made possible by the increased power available with tractors.

While mechanization has solved some farm problems, it has created others. On some farms, the investment in machinery is as great as that in land. It makes the source of power a cash cost and causes the farm operator to be more vulnerable to price changes.

### SIZE OF FARMS

As another effect of mechanization is to give more power per farm, an operator can usually operate a bigger farm than formerly with the same amount of power. This has resulted in a steady increase in the size of farm units, especially during the last 10 or 15 years.

**Table A63—Farm Holdings, by Size of Farm, Ontario, 1901-1951**

All occupied farms	No.	1901	1911	1921	1931	1941	1951
		204,054	212,108	198,053	192,174	178,204	149,920
<b>Size of Farm</b>							
1- 4 acres		9.1	8.9	4.2	4.1	2.5	1.8
5- 10 acres		3.7	4.2	3.9	4.2	3.8	4.2
11- 50 acres		17.1	17.1	16.6	15.9	14.9	13.1
51-100 acres		37.3	36.9	37.7	35.7	35.5	31.8
101-200 acres		25.8	25.9	29.4	30.4	31.9	33.2
Over 200 acres		7.0	7.0	8.2	9.7	11.4	15.9
		100.0	100.0	100.0	100.0	100.0	100.0

This trend is still continuing, although it is now taking the form of using special machinery to handle a job, rather than the simple displacing of horse power by tractor power. The rise in the number of tractors in Ontario has been accompanied by a decline in horses from 700,000 in 1920 to 176,000 in 1954. Most of this decline occurred since the end of the Second World War. The

The increased size of farms also creates many management problems. There is the added difficulty of financing in a business which changes owners every generation. A still bigger problem on livestock farms is to keep the size of the barn adjusted to the carrying capacity of the land. The operator also has a serious problem in adjusting larger enterprises to the manpower available.

## USE OF FERTILIZERS

Fertilizer prices have risen only 82 per cent since pre-war days—less than most of the other goods and services farmers buy. The use of fertilizer has more than doubled in Canada since 1940. This increased use accounts for much of the rise in the physical volume of production on Ontario farms. The greater quantity now employed has caused many problems to arise concerning its proper use. Its use also contributes to the cash basis of farm operation and makes farm operators more vulnerable to price changes.

**Table A 64—**  
**Fertilizers Sold for Consumption in Canada,**  
**Years Ended June 30, 1927-1954**

Year	Fertilizers (tons)	Year	Fertilizers (tons)
1927	169,564	1947	660,721
1929	223,750	1948	672,171
1930	321,207	1949	741,726
1935	212,479	1950	764,581
1940	346,721	1951	770,507
1945	575,107	1952	768,545
1946	632,943	1953	819,803
		1954	811,641

Note: Ontario's share was about 50 per cent of the above figures and, in 1954, amounted to 426,611 tons.

## LAND USE

There is a considerable difference in the quality or usefulness of different soils. Different climatic conditions also play a part. The increase in the use of fertilizer and machinery has been concentrated on the better soils of Ontario. On the other hand, some of the poorer soils have been abandoned.

The 1941 Census listed a total of 178,204 farms in Ontario. In 1951, this count dropped to 149,920 farms, with a corresponding drop in the number of farm operators. There was a change in the definition of farms in 1951, but this change would only account for about 4,000 farms in the decrease of 28,284 farms.

Part of this drop in the number of farms occurred close to cities and was due to urban developments, while in some cases farms were united together to obtain a better unit. But in the great majority of cases, the farms were abandoned, in the sense that the owner lost interest in fully working them to obtain a living. In many cases, the operator is still

living on the farm but has ceased to cultivate it. The drop in the amount of agricultural land in southern Ontario from 1941 to 1951 was greatest in certain townships remote from cities. A similar pattern was found in the settled areas of northern Ontario. Most of the abandonment has occurred far from markets, particularly where the land is hilly or stony or in small patches, and hence does not lend itself to mechanical operations. While this passive retreat from the competitive conditions caused by industrial development has been necessary in some farm units, the majority of farm operators has sought to adjust to the change in economic conditions by changes in farming methods or in the farm unit itself.

Land use has remained largely as it was in 1911. This is in contrast to equipment and work methods, which have been changing rapidly. Over half of the rotation crop land is in grass and legumes. (In Denmark, the corresponding figure is only 21 per cent.) This is, no doubt, due to Ontario's relative advantage over Western Canada in producing forage crops and the strong competition from the West in growing grains. Some important shifts have occurred. One is the dropping of dry peas and field roots. Peas have been replaced by commercial protein concentrates in feeding practices and field roots take too much hand work to compete with other available feeds. Another shift has been from oats to mixed grain; as well, there has been an increase in the amount of soy beans grown. Tobacco has been important in dollar revenue but has not affected many agricultural acres.

While the over-all land use has not altered very much, individual farms have. For example, fewer major crop raising farmers are growing any one crop, even though the total quantity produced remains about the same.

**Table A65—**  
**Number of Farms Reporting Field Crops,**  
**Ontario, 1941 and 1951**

	1941	1951
Potatoes	123,615	64,951
Oats	111,661	87,743
Barley	43,921	18,489

This tendency toward specialization has extended to the livestock field and we find fewer farms keeping sheep or swine or cattle, even though the total numbers kept remain relatively constant.

**Table A66—**  
**Number of Farms Reporting Livestock,**  
**Ontario, 1941 and 1951**

	1941	1951
Sheep	94,305	11,338
Swine	121,349	93,564
Cattle	150,427	120,899

There is a limit to how far good land can be worked for the extra production needed to meet the needs of a growing population. It is a question whether some of the semi-abandoned farm land will not be needed later. If this land becomes covered with a growth of trash trees, it would be very expensive to bring it back to agricultural use.

### ADJUSTMENTS TO MARKETS

Since Ontario was producing most of its farm products with some export in mind, it was not until the domestic market was absorbing nearly all of them that there was any great change in the production pattern. Even yet, the change is more in what is done with the product after it is produced than in the product produced itself.

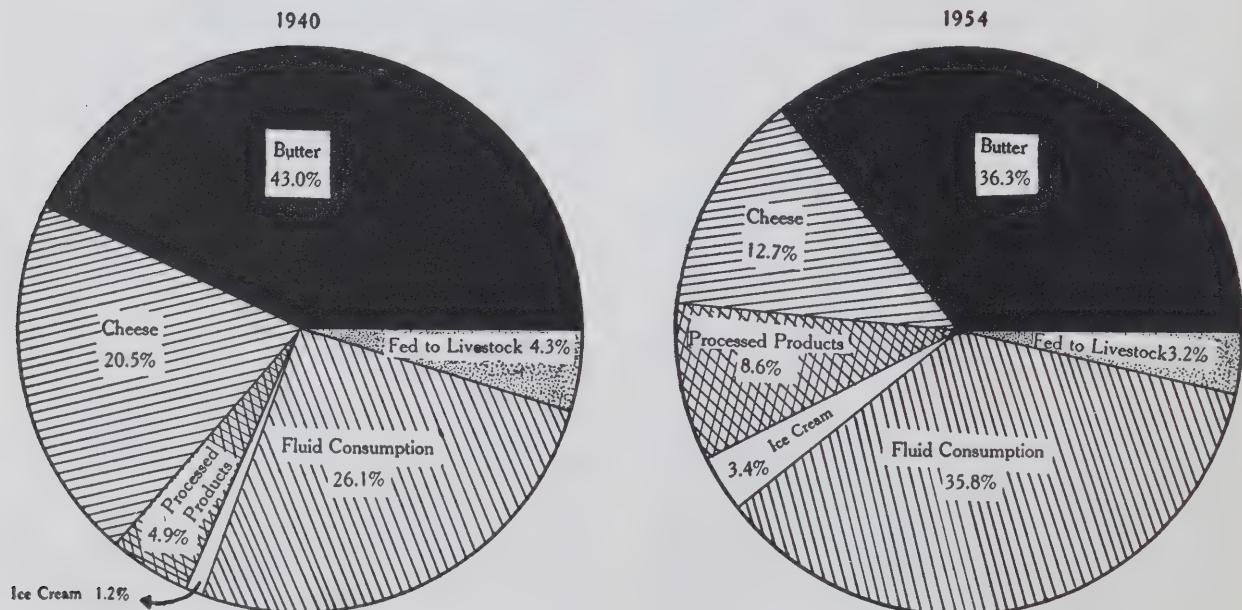
The total level of production in the dairy industry has remained fairly constant, except for

variations caused by normal cyclical swings. However, the percentage of milk going into fluid sales rose from 26.1 per cent in 1940 to 35.8 per cent in 1954. The amount going into processed products rose from 4.9 per cent to 8.6 per cent and the former export in these products has now been largely absorbed in the domestic market. Cheese dropped from an export of over 100 million pounds during the Second World War to a position of no surplus over domestic needs in 1955. The percentage of Ontario milk going into cheese dropped from 20.5 per cent in 1940 to 12.7 per cent in 1954. Butter absorbed 43.0 per cent in 1940 but only 26.3 per cent in 1954.

Pork and beef were produced in roughly similar quantities in 1955 and in the World War II years. However, their marketing has changed from a largely export sale to a mainly domestic one.

Since we are now approaching the point where surpluses are nearing the vanishing point, the greatest adjustment to changing markets is still to come. Increases will be necessary in fresh vegetable, small fruit, tobacco, cereal, corn and possibly winter wheat acreages. These crops will probably expand almost to the position where they can meet the needs of the expected increased population. There is a surplus of winter wheat over the needs for

### PERCENTAGE UTILIZATION OF WHOLE MILK IN ONTARIO 1940 AND 1954



pastry flour now and only a small increase in this crop will be needed. Part of the necessary increases could come from increased yields. In any case, vegetables, fruit and tobacco do not require a large acreage and their increases will not seriously affect the acres available for feed crops.

In time, most of the present milk production in Ontario will be needed for the fluid trade. But even now, this trade raises problems of bulk haulage, and so on. However, many processed products and cheese will also be wanted. While some of these products may be produced further west, the Prairies are not a natural dairy area. If we are to supply most of our needs, the greater part of these products will have to be produced in Ontario. To do this profitably will require a very considerable change in our production methods. Probably none of our farmers would claim that they have found how to produce milk economically for a processed market, yet some of them have made substantial progress in that direction—enough to indicate that, given the right aid via research at the local adaptation level plus good advisory service to put it into

practice, increased and economical production could be attained.

The problems of agricultural adjustment are still very great and will be with us as long as economic conditions continue to change. The solutions to some problems create other difficulties. The changes required can only be brought about and agriculture can only play its full part in economic progress if farm operators are helped by suitable policies—an adequate research and advisory service and improved marketing on a long-term basis. Research will be needed at all levels, but will be particularly required in the realm of local adaptation, such as, for example, the following: which crops grow best on each type of soil; and, what is the response to be obtained from each crop on each soil type from applications of fertilizer or irrigation? As yet, the answers can only be intelligent guesses, since research has not yet been able to provide all the answers. If the answers were all available, it would be necessary to have a much larger advisory service to answer all the questions that would be asked.



## APPENDIX VII

# The Mining Industry in Ontario

## MINERAL PRODUCTION

### Introduction

Ontario's mining industry holds a key position not only in the economic life of the Province but in that of the entire country. It ranks fourth among the Province's industries in net value of production—following manufacturing, construction, and agriculture, in that order, and preceding electric power, forestry, fisheries and trapping. The net value of production (total value of output, excluding indirect taxes, less cost of material, fuel, purchased electricity and supplies consumed in the production process) amounted to over \$200 million in 1954, while the gross value of output (which includes the cost of materials, etc.) in the same year came to \$503.8 million.<sup>1</sup> This was the first time in the history of the industry that its gross value exceeded half a billion dollars.

A general upward trend in the value of production took place from the beginning of the century until the period 1943-1946, while an extremely rapid rise has occurred in the years since then. Equally impressive, and a fitting corollary to the rise in production, is the increase in prospecting activity, which in 1955 resulted in the staking of 57,367 mining claims, compared with a previous annual average in Ontario of about 14,000. The total area represented by the claims staked in 1955 exceeded 3,000 square miles.

Almost 79 per cent, by value, of Ontario's mineral production in 1954 was made up of metallic minerals; the gross value of output of these minerals was over \$395 million in 1954. The output of structural materials (clay products, cement, lime, sand and gravel, and stone) was valued at more

than \$82 million during 1954 and accounted for over 16 per cent of Ontario's mineral output. During the same year, the value of the output of non-metallic minerals (salt, asbestos, nepheline syenite, etc.) and fuels (natural gas, petroleum and peat) stood at over \$26 million, of which fuels accounted for some \$13 million.

Individually, several of Ontario's mines and mineral products are of world-wide importance. The mines of the Sudbury Basin, for example, provide over 80 per cent of the free world's supply of nickel and virtually all of Canada's present supply of platinum and other related metals. In fact, as a source of platinum, Sudbury is one of the world's largest. From Sudbury, there also comes silver and gold and nearly half of Canada's copper, the largest single producer of the latter in the British Commonwealth being the International Nickel Company of Canada, Ltd. Cobalt is also mined in the Sudbury Basin, which, together with the Cobalt area in Timiskaming, has established Ontario as the only cobalt-producing province in Canada.

**Table A67—**  
**Value of Metallic Mineral Production in**  
**Ontario, 1954**

Metal	Value of output (\$000's)	Percentage of Total Value of Metallic Mineral Production in Ontario
Nickel	176,566.3	44.7
Copper	81,343.5	20.6
Gold	80,460.3	20.4
Platinum metals	20,906.6	5.3
Iron Ore	20,341.2	5.2
Cobalt	5,913.0	1.5
Silver	4,530.5	1.1
Calcium and magnesium	4,101.6	1.0
Selenium	474.1	0.1
Lead	375.3	0.1
Zinc	170.1	—
Tellurium	12.6	—
Total	395,185.1	100.0

<sup>1</sup> Mineral Production in Ontario in 1954 was as follows:

Mineral Group	Value (\$ million)
Metallic	395.2
Non-metallic	13.1
Fuels	13.2
Structural materials	82.3
Total	503.8

Nickel, copper, gold, platinum metals, iron ore, cobalt, silver, calcium and magnesium are the principal metals mined in Ontario, but lead, zinc, selenium, tellurium and uranium are also found in sizeable quantities. The latter is, of course, coming to occupy a position of great prominence.

Some of the chief metallic minerals produced in Ontario are considered in greater detail below.

## Nickel

The value of Ontario's nickel production amounted to over \$176 million in 1954, or about 45 per cent of the Province's total metal output. Virtually all the Canadian supply of nickel is produced in Ontario and, in value, it is the most important metallic mineral mined in this Province.

## Gold

Traditionally, Ontario has been a gold-producing Province. But following an all-time peak reached in 1940, when the output of Ontario's gold mines reached a value of \$122.6 million, output declined in the face of a shortage of labour and a cost-price squeeze. In spite of many difficulties, the industry has fought back by adopting new techniques and introduced many operating economies. In 1954, the value of production of gold stood at more than \$80 million. This was half the total for all of Canada.

## Iron Ore

In recent years, the emphasis has been more on ferrous and base metal developments. As far as iron is concerned, since the opening of the New Helen Mine in the Algoma District in 1939 and the beginning of production from the fabulous Steep Rock range in northwestern Ontario in 1944, its production has been climbing steadily. In 1954, shipments from these two major sources amounted to nearly 2½ million tons. In 1955, ore shipments were nearly double those of 1954. At Steep Rock, mining is being carried on at two ore bodies, and another ore body, which has been leased to an American company, Inland Steel, is being prepared for production about 1960. It is expected that the entire range will have an eventual output of 10 million tons annually. Ore reserves have already been outlined sufficient to ensure production at that rate for some decades.

In May of last year, the production of iron ore began from a new source—the Marmaraton mine in eastern Ontario, owned by the Bethlehem Steel

Corporation. The anticipated annual production from this source is well over one million tons of ore, which, after beneficiation, will yield approximately 500,000 tons of high grade product in pelletized form.

In 1953, the International Nickel Company of Canada announced that it had evolved a process for extracting high-grade iron oxide from the indigenous nickel-copper ores of the Sudbury Basin. The first unit of the plant being constructed for this purpose at a cost of \$16 million is nearing completion. With this plant, the company plans to extract as much as one million tons of high-grade iron oxide annually. This additional tonnage of iron will be a major contribution to Ontario's mining economy, and, what is of equal importance, the extraction of iron from these nickel-copper deposits will make the mining of a great deal of marginal nickel ore economically feasible.

Besides the above-mentioned iron ore deposits which are being worked, there are many other known large medium-to-low grade deposits of magnetite which, tests have shown, lend themselves to beneficiation, and these deposits will, without doubt, find markets in the not too distant future. Among them might be mentioned the following: a deposit at Calabogie in Renfrew County; the Goulais River deposit situated about 50 miles north of Sault Ste. Marie; the Burwash Lake deposit 40 miles north of Sudbury; a deposit in Boston Township in the District of Timiskaming; deposits in Clay and Howells Townships 25 miles north of Kapuskasing; a deposit at Percy Lake 30 miles north of Nakina; and one at Bruce Lake in the Patricia District.

The value of iron ore extracted in Ontario during 1954 amounted to more than \$20 million.

## Copper-Lead-Zinc

The output of copper in Ontario during 1954 stood at over \$81 million; lead production was valued at \$375,000 during the same year; and the zinc output at \$170,000.

Interest in copper, particularly in recent years, has been most intense. In the Manitouwadge Lake area, north of Lake Superior, two new mines are coming into existence in a rich copper-zinc ore zone. Since the discovery of ore in 1952, rapid steps have been taken to promote production. A road has been constructed into the lake from the south, and both of Canada's major railway systems have built branch lines to serve the mines and the new townsite, which is going up in a place until

recently unknown bushland. The town, with all amenities, is being built to serve a population of several thousand people.

Exploration carried on over the last two years or more on a deposit of copper, lead and zinc in the Sudbury Basin near Vermilion Lake has proven up a large tonnage of medium grade ore. The property includes, in what was formerly the Errington Mine on the east end of the lake, 3 shafts and extensive underground workings, as well as a fourth shaft in a separate deposit on the south side of the lake. Plans for production have not yet been announced, but there is every reason to anticipate substantial output from this source.

The production of copper commenced last year on a large island in Temagami Lake, from a pocket of very high grade ore which lends itself to open pit operations. Associated with the high grade ore is a zone of low grade nickel-bearing material. Exploration is being carried on with a view to proving up a sufficiently large tonnage of ore to justify the erection of a plant to produce a concentrate for shipment.

Mention should also be made of two other copper deposits—one at Mamainse Point, 35 miles north of Sault Ste. Marie and the other near Kashabowie, 50 miles west of Fort William; and two nickel-copper deposits, one at Populus Lake, 40 miles southeast of Kenora and another at Werner Lake, 50 miles north of the same town.

## Uranium

In September, 1955, the most important single mining event to occur in Ontario for many years was the first production from the Pronto Uranium Mine in the Algoma-Blind River area. It marked not only the opening of a new mine, but the inception of a whole new phase of mining in this Province. Within the next year, the schedule calls for the opening of at least 3 other major uranium producers in the same area.

The reserves so far outlined show, at present prices, more than one billion dollars worth of uranium ore, with indications of further ore valued in the order of \$2 billion. This means that Ontario has the largest known uranium deposits in the world. Already the Canadian Government has signed production-purchase contracts amounting to more than half a billion dollars for ore from this district to be mined before 1962.

Private capital investment in the district has been equally impressive. Already, about \$100 million has been committed, apart from public funds being invested by the various branches of

the Ontario Government. Ontario Hydro's investment so far has totalled around \$1 million. The Province will share in the outlay for a new model town, whose population may eventually reach 20,000, to be built at Elliot Lake to serve the mines in that area. A permanent highway to serve the new town and mines is under construction.

Development work is proceeding in another uranium-rich section—the Bancroft area in eastern Ontario. This should occasion no surprise, since the first discovery in Ontario of uranium in quantity was made at Wilberforce in Haliburton County almost 30 years ago. Unsuccessful attempts were made at that time to mine the ore commercially as a source of radium. With the heightened interest in uranium since the war, a renewal of exploration in eastern Ontario was rewarded by the discovery of several deposits of commercial significance. As regards one of these deposits, there is not only a definite program for production, but also considerable underground work has been completed, a mill is under construction and housing projects for its employees are under way.

## Non-Metallic Minerals, Structural Materials and Fuel

Salt is one of Ontario's most important non-metallic minerals. In 1954, the value of Ontario's salt output was close to \$4.5 million. Until recently, the material was, in all cases, forced to the surface in the form of brine, but one company has recently changed its method of extraction, so that the salt will be mined underground like a metallic mineral. So plentiful are the reserves that the supply of salt is regarded as practically inexhaustible.

Second in order in value of output is asbestos, which in 1954 yielded over \$3.5 million. There is only one operating asbestos mine in the Province, that near Matheson, but substantial deposits are known to exist in other areas.

Ontario enjoys a North American monopoly in the production of nepheline syenite, a product widely used in the ceramic industry. The mine at Nephton, a few miles east of Lakefield, had an output valued at nearly \$1.8 million in 1954.

As far as structural materials are concerned, the numerous sand and gravel pits, most of which are located in the southern part of the Province, provide an important source of wealth and form the basis of an important industry. The output of sand and gravel, together with other structural materials—clay products, cement, lime and stone—was valued at more than \$82 million in 1954.

While natural fuel is not abundant in the Province, the production of natural gas and oil from wells in southwestern Ontario in 1954 was valued at over \$13 million.

**Table A68—  
Production of Non-Metallic Minerals, Fuels  
and Structural Materials in Ontario, 1954**

Mineral	Value of Production
	(\$000's)
<b>Non-Metallic Minerals</b>	
Salt	4,440.4
Asbestos	3,497.8
Nepheline syenite	1,770.5
Quartzite and quartz	1,270.7
Gypsum	822.1
Sulphur <sup>1</sup>	496.0
Graphite	253.4
Silica brick	221.1
Talc	169.7
Arsenic <sup>2</sup>	48.3
Fluorspar	40.1
Feldspar	22.1
Mica	4.2
Mineral waters	0.8
	<b>13,057.2</b>
<b>Fuels</b>	
Natural gas	11,758.5
Petroleum, crude	1,390.0
Peat	19.9
	<b>13,168.4</b>
<b>Structural Materials</b>	
Sand and gravel	25,577.6
Portland cement	18,958.2
Stone	12,632.3
Quicklime	5,771.7
Hydrated lime	1,909.0
Sand-lime products <sup>3</sup>	267.4
	<b>82,346.4</b>

(1) Tonnage given in sulphur content of sulphuric acid.

(2) Shipments from Ontario sources and not actual production figures.

(3) No deduction made for lime used in manufacturing.

### Future Trends in Mineral Production

A consideration of future trends in Ontario's mineral production over the next 25 years reveals an impressive picture with respect to all our products, with the possible exception of gold.<sup>1</sup> In the case of the nickel-copper and associated mineral

<sup>1</sup> For a review of the gold situation, see Report of the Committee of Inquiry into the Economics of the Gold Mining Industry in Ontario, 1955.

products of the great Sudbury Basin, the proven reserves of the two main producers justify the prediction that they will be able to continue to produce, at the present rate at least, for another 25 years. The association of copper with lead and zinc, as illustrated by the Manitouwadge, and other developed or partially developed, deposits, will add very substantially to the production of these metals.

Production of iron ore by the present producers, along with that of by-product ore from the treatment of sulphides, would indicate that, by 1960 or thereabouts, Ontario will be producing at a rate of upwards of 14 million tons of iron ore annually. Possibly by that time and almost certainly within 25 years from the present, some of the extensive lower grade deposits will have been developed and these may add materially to Ontario's production.

The situation with respect to Ontario's production of uranium in the immediate future is reasonably certain. Allowing for one mill at present in production and for others under construction or announced (all of which are based on proven ore bodies), 5 companies will have a combined mill capacity, by the beginning of 1957, large enough to enable them to treat about 15,000 tons of ore per day. Both the Blind River and Bancroft areas should show increases in ore potentialities. Already, explorations in recent years have indicated other substantial ore deposits. The question of available markets after January 1, 1962 must be taken into consideration, but it would now appear that, from the long-term viewpoint, the use of uranium for power purposes should ultimately provide a ready market for this mineral.

Research in modern science has indicated new and possibly wide uses for such metals as lithium, columbium, cerium and others of the rare earth group, of which the Province is known to have extensive deposits.

Deposits of non-metallic minerals, such as asbestos and nepheline syenite, show developed or indicated reserves ample enough to justify the prediction that present production will be maintained and, in the case of nepheline syenite, will allow for expansion. Industrial minerals, such as salt, gypsum and limestone, as well as the construction materials, sand and gravel, will be capable of keeping pace with the rapid expansion in the industrial chemical and construction industries.

The only serious cloud on Ontario's mineral production horizon is the future of gold. The yellow metal which played such an important part

in the economy of the Province is today in a difficult position, and unless some marked improvement in the present price structure takes place, our gold production must inevitably decrease. In 1939, Ontario had 73 mines producing gold, while today we have 33 producers, many of which are either unprofitable or only marginally profitable, even with the aid of federal Emergency Gold Mining Assistance. Prospecting for new gold deposits has practically ceased, and the present producing mines are operating on reserves developed in earlier years.

Ontario has well over 200,000 square miles still available for acquisition under the Mining Act. While some of this vast area may have been prospected to a certain extent, much of it remains virgin territory. Ordinary prospecting methods combined with the new scientific tools for mineral exploration indicate that in these Crown Lands the Province possesses vast potentialities for the discovery of new mineral deposits.

## THE WORK OF THE ONTARIO DEPARTMENT OF MINES

### Introduction

The work of the Ontario Department of Mines is divided into several branches which can be grouped under the categories of administrative and technical services. The former covers matters such as the recording of claims, assessment work, securing of titles to mining lands, taxation of mines, statistics, accounting, publications, etc. The latter, which are dealt with below, include geological surveys, mine inspection, laboratories and mining access roads.

### Geological Branch

At the head of this branch is the Provincial Geologist, who has on his permanent staff an Assistant Provincial Geologist, five geologists at headquarters and five other resident geologists stationed at convenient centres in northern Ontario. The work of the Geological Branch includes pleistocene geology, ground water surveys (chiefly in southern Ontario), field geological and geophysical surveys, the examination and mapping of mineral deposits, the preparation of reports and maps covering the field work, the identification of rock and mineral specimens and the appraisal of geological and other maps submitted for assessment. As a result of discussions held some years

ago with officials of the federal Department of Mines, an understanding was reached whereby the Federal Geological Survey would concentrate its efforts in Ontario primarily on systematic mapping of the geology of the Province, on a scale of 1 inch equals 4 miles, while the Ontario Department of Mines, because of its control of mining lands and close association with the mining industry, would confine its investigations chiefly to mining districts and areas favourable to the occurrence of mineral deposits, where mapping in greater detail is required. For some reason, this arrangement was found by the federal Department of Mines to be unsatisfactory. It thereupon decided that funds and personnel could be used to better advantage on other projects or elsewhere than in Ontario. Consequently, the Geological Survey has, for some years, confined its investigations in Ontario to stratigraphic studies in the southwestern part of the Province, examinations of drill cuttings from the oil and gas fields, the mapping of glacial deposits and local problems of a research nature. In 1954, it commenced detailed studies of the radio-active deposits in the Blind River and Haliburton-Bancroft areas.

In an effort to encourage the federal Department of Mines to enlarge its program of aerial mapping in Ontario, the suggestion was made, in February, 1946, that the Federal Geological Survey undertake mapping of a potential mineral-bearing area consisting of 18 townships, or approximately 600 square miles, lying between the Kirkland Lake belt and the easterly extension of the Porcupine belt, and extending east from the line of the Ontario Northland Railway to the Quebec boundary. Work was begun in the field season of 1947 and continued until 1949, by which time one township had been completed. Since then, no further work has been done in the area.

Because the federal Department of Mines has not been in a position, since 1949, to extend its airborne geophysical work in Ontario, the Ontario Department of Mines has found it necessary to engage the services of an outside organization to do such work. In order that the Province may realize the potentialities of its mineral wealth, it is essential to fill out the geological picture of its vast area of pre-Cambrian and other rocks as rapidly as possible. It is suggested, therefore, that the Federal Geological Survey be requested to resume:

- (a) systematic geological mapping of the Province, or reconnaissance mapping of designated areas, and
- (b) aeromagnetic surveys.

## Mines Inspection Branch

The main function of this branch is the regular examination of all operating mines, quarries, gravel pits and metallurgical works to ensure the enforcement of the rules contained in the Mining Act for the protection of all workmen employed in the industry. This branch is also responsible for the supervision of the mine rescue stations established at the main mining centres, as well as the operation of the Cable Testing Laboratory in Toronto.

## Laboratories

The Ontario Department of Mines maintains three laboratories:

(1) The Cable Testing Laboratory in Toronto tests mine hoisting ropes, in order to determine their ultimate strength, and examines test pieces for corrosion, fatigue, lubrication, and so on. The equipment provided for this purpose is the only one of its capacity in Canada, and considerable work is carried on for other jurisdictions outside the Province. Charges are made for these tests on an approximate cost basis.

(2) The Timiskaming Testing Laboratory in Cobalt provides sampling and marketing services for the complex silver-cobalt ores of that area and is equipped to purchase gold ore from small operators. By this method, it renders assistance to pros-

pectors and others. Charges for its services are likewise on a cost basis.

(3) The Provincial Assay Laboratory in Toronto operates analytical laboratories in which mineralogical and other qualitative and quantitative chemical tests are carried out. Some custom analyses are undertaken, but most of its work is confined to assaying and analyzing rocks and minerals; this work is covered by the free coupons issued to prospectors on recording a claim or assessment work.

## The Provincial Institute of Mining

Mention should be made here of The Provincial Institute of Mining at Haileybury, which is administered by the Department of Education. This institution is equipped to give technical training in mining and geology.

## Mining Access Roads

Because of its great area and sparse population, a large part of Northern Ontario is still virtually unknown country, and thousands of square miles of potentially rich mining lands have still to be opened to the prospector. In order to end this isolation and to bring as much of the country as possible into production, the Ontario Department of Mines in 1950 inaugurated a mining access road construction program. During the last 4 years, more than 300 miles of road were provided to facilitate development of the Province's mineral lands, at

**Table A69—Revenue of the Ontario Department of Mines,  
Fiscal Years 1952-53 to 1955-56**

	Ordinary Revenue			
	1952-53	1953-54	1954-55	Forecast, 1955-56
Miners Licenses	\$ 69,416	\$ 97,034	\$ 111,105	\$ 115,000
Recording Fees, Abstracts, etc.	169,967	342,015	424,184	542,000
Rentals: Gas Leases, Mining Leases,				
Licenses of Occupation	56,238	90,128	112,422	107,000
Sand and Gravel Royalties	90,506	112,410	110,106	110,000
Gas and Oil Royalties	450	150	9,987	4,000
Acreage Tax	123,765	147,369	156,280	140,000
Profits Tax	4,377,162	3,994,520	4,509,127	6,000,000
Gas Tax	32,229	31,796	39,855	43,000
Cable Testing Fees	29,156	28,946	34,316	37,000
Chemical and Assay Fees	1,762	2,312	2,893	4,000
Sampling and Assaying Fees	112,665	128,984	136,164	135,000
Right to Lease <sup>1</sup>	—	220,762	—	—
All other services	20,749	33,843	22,998	24,000
Total Ordinary Revenue	5,084,065	5,160,269	5,661,737	7,261,000
Capital Receipts				
Sale of Mining Lands	91,374	64,971	112,186	150,000

(1) This refers to the sale of the right to lease part of the bed of Windy Lake under Section 196 of the Mining Act.

a cost of slightly over \$2.5 million. Where a person or company requests the construction of a road to a particular property, it may be done on a contributory basis, the Government paying up to 50 per cent of the cost. However, where the road is to serve a group of properties or a district, the total cost may be paid by the Government.

While these roads were designed essentially for mining and prospecting enterprises, they may serve other purposes, such as the opening up of agricultural land, the harvesting of the forest, fire protection and the opening up of resort areas for the tourist trade.

(3) Nine per cent on profits over \$5 million. In considering the future revenue which may be obtainable by the Province from mining operations within its borders, a number of factors must be taken into account. Even with all the mining development in the Province during recent years, there were only 63 companies with producing mines in 1952 and 65 in 1953 coming under the scope of the Mining Tax Act. Of these, 35 paid mining tax on the 1952 operations of their mines, and 38 on the 1953 operations. A breakdown of these companies into 5 groups, according to the type of mineral produced, is very revealing.

**Table A70—Expenditure of the Ontario Department of Mines,  
Fiscal Years 1952-53 to 1955-56**

	Ordinary Expenditure			
	1952-53	1953-54	1954-55	Forecast, 1955-56
Main Office, etc.	\$ 357,929	\$ 385,781	\$ 390,030	\$ 413,100
Geological Branch	211,806	203,990	224,046	250,000
Mines Inspection Branch	119,058	118,183	129,645	136,000
Chemical & Assay Lab.	37,125	34,941	40,933	45,500
Cable Testing Lab.	23,730	23,607	27,461	30,500
Timiskaming Testing Lab.	68,357	75,271	82,323	91,000
Natural Gas Commissioner	28,615	29,558	12,154	—
Mining Lands Branch	140,870	161,174	233,911	266,000
	979,790	1,032,505	1,140,503	1,232,100
Sulphur Fumes Arbitrator	8,442	9,167	9,946	17,000
Mine Rescue Stations	113,966	96,813	81,369	100,000
	1,102,198	1,138,485	1,231,818	1,349,100
Government reimbursed by:				
Mining Industry re Sulphur Fumes, Arbitrator and Mine Rescue Stations	192,405	105,976	90,391	117,000
Total Ordinary Expenditure	979,793	1,032,509	1,141,427	1,232,100
Capital Payments				
Construction of Mining Access Roads	870,568	848,097	599,887	750,000

## ANALYSIS OF REVENUE FROM THE ONTARIO MINING TAX

### Introduction

The Ontario Mining Tax is a tax on mining profits and is payable at the following rates:

(1) Six per cent on mining profits between \$10,000 and \$1 million (the first \$10,000 of profits is exempt);

(2) Eight per cent on mining profits between \$1 million and \$5 million;

Tables A71 and A72 show, by groups, the number of companies paying mining tax, the taxable profits of their mines as assessed for mining tax purposes and the amount of mining tax paid on 1952 and 1953 operations, respectively.

These tables reveal that, in both years, the Province obtained in revenue just under 8 per cent of the mines' taxable profits. The percentage of the Province's mining tax revenue to the income of all Ontario companies with producing mines, whether they paid Federal income tax or not, would be somewhat smaller.

A wide variation exists in the taxable profits of

**Table A71—Taxable Profits and Mining Tax Paid by the 35 Companies Paying Ontario Mining Tax on 1952 Operations, by Groups**

Group	No. of Companies Paying Tax	Taxable Profits	Mining Tax Paid <sup>1</sup>
Gold	24 (68%)	\$ 14,970,387 (27%)	973,399 (23%)
Silver-Cobalt	3 (9%)	317,374 (1%)	14,036 (—)
Nickel-Copper	2 (6%)	36,893,473 (67%)	3,193,280 (75%)
Iron	1 (3%)	777,899 (1%)	23,337 (—)
Miscellaneous <sup>2</sup>	5 (14%)	1,942,568 (4%)	81,994 (2%)
	35 (100%)	54,901,701 (100%)	4,286,046 (100%)

(1) Includes refunds of \$46,801 to non-designated municipalities or school sections.

(2) The miscellaneous group comprises mines producing various non-metallic minerals and mines producing certain minor metallic minerals.

**Table A72—Taxable Profits and Mining Tax Paid (Preliminary) by the 38 Companies Paying Ontario Mining Tax on 1953 Operations, by Groups**

Group	No. of Companies Paying Tax	Taxable Profits	Mining Tax Paid <sup>1</sup>
Gold	25 (66%)	\$ 12,045,141 (23%)	773,444 (20%)
Silver-Cobalt	3 (8%)	362,661 (—)	11,885 (—)
Nickel-Copper	3 (8%)	36,239,341 (71%)	3,110,452 (77%)
Iron	1 (2%)	1,081,550 (2%)	55,693 (1%)
Miscellaneous	6 (16%)	1,590,054 (3%)	83,649 (2%)
	38 (100%)	51,318,747 (100%)	4,035,123 (100%)

(1) Includes refunds of \$52,509 to non-designated municipalities or school sections.

the 5 groups of mines. In 1953, whereas the gold group comprised 66 per cent of the companies paying tax, it had taxable profits of only \$12 million, or 23 per cent of the taxable profits of the mines in all groups. In contrast, the nickel-copper group, comprising 8 per cent of the companies, had mines with taxable profits of \$36.2 million, or 71 per cent of the taxable profits of all mines. This concentration of taxable profits in the mines of a few companies is the basic characteristic of the industry and is a major point to be considered in connection with the mining tax.

Of the 38 companies paying mining tax on 1953 operations, only 11 companies reported taxable profits from their mines in excess of \$500,000. Seven of these were in the gold group, two in the nickel-copper group, one in the iron and one in the miscellaneous group.

### Tax on Gold Group

The number of producing gold mines in the Province declined from 62 in 1948 to 38 in 1953. Taxable profits as assessed for mining tax purposes showed a similar decline, falling from about \$38.4 million in 1939 to \$12.0 million in 1953. In con-

stant 1935-39 dollars, the drop was even greater, from \$38.4 million in 1939 to somewhat under \$7 million in 1953.

The United States, the world's principal purchaser of gold, in effect sets the world price which, in terms of its currency, has remained at \$35 per ounce since 1934. While the price has remained fixed, operating costs have risen sharply. For example, the average weekly wage and salary in the gold mining industry rose from \$34.84 in 1939 to \$63.26 in 1953—an increase of over 80 per cent. Production costs, including taxes, which in 1939 were \$22.35 per ounce, climbed by nearly 50 per cent to \$33.02 per ounce in 1953. In 1939, the average price per ounce of gold produced in Ontario was \$36.14 per ounce, giving an excess of average price over average cost of \$13.79 per ounce; but, in 1953, the excess was only \$1.39 per ounce. Thus, the gold producer has been caught between rising costs and a fixed price. The premium which the Canadian currency has enjoyed in terms of the U.S. dollar during the past few years reduced the price received by the gold producers.

In 1951 (the last year for which figures for such a comparison are available) gold mining companies made profits before payment of taxes of about \$25.8

million. Of this amount, the Province collected about \$1,274,000 in mining tax and \$158,000 in corporation tax<sup>2</sup>, or a total of \$1,432,000. On the other hand, the Federal Government collected over \$4.7 million in corporation tax; that is, more than 3 times the Province's receipts. The Ontario mining tax collected on the 1953 operations of this group amounted to about \$773,000, and, on the 1954 operations, an estimated \$943,000.

Within the industry, a few companies account for a large percentage of the profits. For instance, Kerr-Addison paid 33 per cent of the total mining tax levied on the 1951 operations of the gold group, over 42 per cent on the 1952 operations and 39 per cent on the 1953 operations. This company paid about 20 per cent of the total Ontario corporation tax and about 34 per cent of the total Federal corporation tax levied on the 1951 operations of all Ontario gold mining companies, which in that year numbered 44.

Obviously, unless basic economic conditions facing the gold mining industry alter considerably, the Province cannot look to this industry for any large increase in future revenues.

### Tax on Silver-Cobalt Group

The value of silver produced by the mines in the silver-cobalt group rose from about \$700,000 in 1949 to \$3 million in 1953, while the value of cobalt production decreased from about \$346,000 in 1949 to \$251,000 in 1953.

In 1951, silver-cobalt mining companies made profits, before payment of taxes, of about \$2 million. Of this amount, the Province collected about \$53,000 in mining tax and \$12,000 in corporation tax, a total of \$65,000. The Federal Government did not collect any corporation tax, because the liability of these companies was offset by the 3-year exemption from tax granted to new mines. Taxable profits, as assessed for the Ontario mining tax on the 1953 operations of this group of mines, totalled about \$363,000; about \$12,000 was paid in mining tax. The mining tax collected on the 1954 operations of this group amounted to about \$22,000.

The tax potentiality of the group is very small. Even if a relatively large rise in production and

\* Taxable profits as assessed for Ontario mining tax on the 1951 operations of mines were exempt from Ontario corporation tax. 1951 was the last year in which Ontario collected corporation taxes, as under the Federal-Provincial Tax Rental Agreement, signed in 1952, the Province gave up this tax levy.

profitability were to take place, the Province cannot look to these mines for substantial additions to its future tax revenue.

### Tax on Iron Group

The value of iron ore produced in Ontario has risen greatly since 1938, when production was resumed after a lapse of 15 years. It amounted to about \$342,000 in 1939, \$6.8 million in 1946, and \$23.1 million in 1953. Substantial expansion of output in the future is practically assured.

In common with the prices of most other metals except gold, the price of iron ore has increased steadily. The average price received by Canadian producers rose from about \$2.76 per short ton in 1939 to \$6.57 per short ton in 1953.

On 1951 operations, the companies in the iron group paid about \$78,000 in mining tax and \$20,000 in corporation tax to the Province, a total of \$98,000. The Federal Government collected an estimated \$164,000 in corporation tax from these companies for the same year. On 1953 operations, the Province collected about \$56,000 in mining tax from these companies and on 1954 operations, about \$28,000.

The amount of taxes being collected from the producers in this group is not, however, truly representative of the tax potentiality of the group. With production increasing at the mines at Steep Rock and Marmaraton, with a gradual reduction in the Steep Rock development expenditures that have offset mining tax liabilities for some years, and with the conclusion of the 50 per cent deduction period for Algoma Ores in 1954, it is estimated that about \$200,000 will be collected in mining tax on 1955 operations and that this figure will rise to about \$1 million within several years. The Federal Government levies are expected to increase even more rapidly.

### Tax on Nickel-Copper Group

The strong demand for both nickel and copper in the years following the Second World War has had a tremendous effect upon the prices which producers have received. Although the 1953 output of nickel was not much above the 1948 level, the dollar value was considerably more than double; and the same general situation also holds true of copper. The quoted price of electrolytic nickel rose from about 27½ to 57 cents per pound between 1943 and 1954, while that of electrolytic copper rose from about 12 to 30 cents per pound over the same period.

Both major companies in this group, International Nickel and Falconbridge, have been expanding their operations and this expansion will continue for some years.

It appears likely that the demand for nickel and copper will continue strong for the next few years and, despite the possibility of price fluctuations, this group will undoubtedly continue to provide the bulk of Ontario's mining tax revenue. In 1951, 71 per cent of profits made by Ontario mining companies in all groups, before payment of taxes, came from this group. This gives an indication of the dominant position the nickel-copper mines hold in the Province's mining industry; however, it should be noted that a good portion of the group's profits arise from processing and fabricating operations outside Ontario. Of the \$96.7 million in profits earned before taxes by the group in 1951, the Province collected \$3.8 million in mining tax (representing 72 per cent of total mining tax receipts) and \$3.9 million in provincial corporation tax (88 per cent of the total amount of this tax collected from all Ontario mining companies), for a total of \$7.7 million in provincial taxes. However, on 1951 operations, the Federal Government probably received 4 times as much, or around \$30.4 million, in corporation tax from the same source. The Ontario mining tax on the 1953 operations of this group amounted to about \$3.1 million, and on 1954 operations, to about \$3.5 million.

### Tax on Miscellaneous Group

The output from mines in the miscellaneous group makes a valuable contribution to the overall mineral wealth of the Province, but its value is small in comparison with that from producers in the nickel-copper and gold groups. For example, in 1953, the value of asbestos production was about \$4 million and of nepheline syenite, about \$1.6 million. The production of a substantial quantity of asbestos in Ontario was initiated by Canadian Johns-Manville in 1950, and although the 50 per cent deduction period for Ontario mining tax ended in 1953, development expenditures are expected to offset mining tax liabilities almost entirely for several years to come. However, an increase in the output of nepheline syenite by the present producer, American Nepheline, and the prospective output of the Canadian Flint and Spar Company within a year or so, should partially restore mining tax collections from this miscellaneous group. The commencement of rock salt production in Ontario by the Canadian Rock Salt

Company in 1955 should yield some mining tax revenue when full production is attained.

In 1951, the companies in the miscellaneous group earned profits before taxes of \$8.8 million, of which the Province collected about \$109,000 in mining tax and \$330,000 in corporation tax, a total of \$439,000. The Federal Government collected about 6 times as much, or around \$2.9 million, from the same source on 1951 operations. Ontario mining tax on the 1953 operations of this group amounted to about \$84,000, and on 1954 operations, to about \$28,000.

There is no indication of a substantial rise in mining tax collections from this group in the near future.

### Tax On New Groups

Brief mention should be made of estimated mining tax revenue from uranium and copper-zinc production in the near future.

The production of uranium was initiated in Ontario by Pronto in 1955. Algom, Denison and Bcroft are scheduled to have their mines in production before 1958. Several others may qualify for Federal Government special-price contracts. It is estimated that about \$150,000 in mining tax will be payable by uranium producers on their 1956 operations and about \$2 million on their 1958 operations.

The production of copper-zinc ore by Geco from the Manitouwadge deposits is scheduled to commence in 1957. If copper and zinc prices are 35 cents and 12 cents per pound, respectively, at that time, it is estimated that possibly \$400,000 in mining tax will be payable on 1957 operations and about \$600,000 on 1958 operations.

### PROVINCIAL GRANTS TO MINING MUNICIPALITIES

Mining municipalities, and school sections in unorganized territories, were entitled by Section 33 of the Ontario Assessment Act to tax the profits from a mine or mineral work within their boundaries. This tax must not exceed 1½ per cent on profits between \$10,000 and \$2,333,333, and 2½ per cent on profits in excess of \$2,333,333; the actual rate must be approved by the Department of Municipal Affairs. In addition, there was established, in 1943, a system of special Provincial grants in aid to mining municipalities; 4 years ago this system was revised.

Many of the gold mining communities found that

with rising production costs and consequently declining profits in the gold mining industry, revenues derived under Section 33 of the Assessment Act and from other sources were becoming insufficient to provide adequate services. Moreover, a serious drawback to Section 33 as a source of revenue to mining municipalities was the fact that a relatively long period of time sometimes elapsed between the sinking of a new shaft and the date the

mine first showed a profit and thus became assessable. Accordingly, the Provincial Government, in order to assist mining communities, undertook to pay grants based upon a new formula to a number of designated mining municipalities, in lieu of the levy the latter were entitled to make under the Assessment Act. In 1954, 33 designated mining municipalities received grants totalling almost \$1.5 million.



## APPENDIX VIII

# Forestry and the Forest-Based Industries in Ontario

### FOREST RESOURCES AND FOREST PRODUCTION

#### **Forest Land Tenure**

Occupied forest land in Ontario is, to an overwhelming extent, Crown land. Crown forest lands account for some 84 per cent of the total occupied forested area in Ontario, as against 76 per cent in Quebec and only 40 per cent in British Columbia.

Forested areas, or, strictly speaking, rights to cut Crown timber, are disposed of in three different ways in Ontario. The largest sector of the occupied Crown forest lands of Ontario is held under agreement by the pulp and paper companies. Accounting for a much smaller proportion of the total occupied

Crown forest lands are the forested areas held under timber license. These licenses are awarded at "timber sales", which are conducted by public tender. Areas covered by timber licenses are operated for pulpwood, sawlogs, poles and so on. The license sets out the species which may be cut. Lastly, a relatively small amount of timber is disposed of each year by permits to cut specified quantities of designated species in particular areas.

As regards privately-owned forest lands, it might be pointed out that the proportion of such lands accounted for by farm woodlots is smaller in Ontario than in Quebec and is, moreover, smaller than the proportion for all of Canada. Nevertheless, farm woodlots in Ontario comprise almost one-third of the privately-owned forested area.

**Table A73—Forest Land Tenure, Ontario, Quebec, British Columbia  
and Canada, 1954<sup>1</sup>**

	Ontario	Quebec	British Columbia	Canada
<b>Occupied Crown Forest Lands</b>	<b>97,809</b>	<b>80,750</b>	<b>7,418</b>	<b>221,090</b>
<b>Privately-owned Forest Lands:</b>		(square miles)		
Farm Woodlots	6,020	9,179	1,807	35,594
Other Private Lands	13,035	15,858	9,219	68,135
Sub-total	<b>19,055</b>	<b>25,037</b>	<b>11,026</b>	<b>103,729</b>
<b>Total Occupied Forest Lands</b>	<b>116,864</b>	<b>105,787</b>	<b>18,444</b>	<b>324,819</b>
	%	%	%	%
Percent of total occupied Forest Lands accounted for by occupied Crown Forest Lands	83.7	76.3	40.2	68.1
Percent of total occupied Forest Lands which are privately-owned	16.3	23.7	59.8	31.9
Percent of privately-owned Forest Lands accounted for by farm woodlots	31.6	36.7	16.4	34.3

(1) Department of Northern Affairs and National Resources, Forest and Forest Products Statistics, Amendments, 1955.

## Ontario's Inventory of Forest Resources

The inventory of accessible timber of merchantable size—timber over 4 inches diameter breast high—reveals that the Province has accessible timber resources with a merchantable volume of well over 80 billion cubic feet.

The merchantable volume of the Province's timber resources, on both private and Crown lands, is distributed among various species and size classes. The distinction between saw timber, (10 inches diameter breast high and over), and "smaller material", (4 to 9 inches diameter breast high) may be regarded, for the most part, as one between merchantable timber of sawlog size, that is, timber of a size sufficiently large for manufacture into lumber, and merchantable timber of a size suitable for pulpwood, poles, railway ties and

certain other products, depending upon the species. Pulpwood is, of course, the most important single item.

As far as the standing volume of saw timber is concerned, the 4 most common species, grouping softwoods and hardwoods together, are poplar, spruce, jackpine and birch, in that order. On the other hand, from the point of view of the actual annual cut of sawlogs on Crown lands, poplar ranks relatively far down on the list of species from which sawlogs are obtained. The 4 species most commonly cut for sawlog purposes in Ontario are white and red pine (considered together), jack pine, spruce and birch.

As regards the inventory of "smaller material", spruce heads the list of standing timber. Moreover, spruce is the principal species cut for pulpwood on Ontario's Crown lands, followed by jack pine, poplar and balsam.

**Table A74—Accessible Timber of Merchantable Size by Principal Species, Ontario, 1955<sup>1</sup>**

Species	Softwoods			Total Saw Timber and Smaller Material		
	Saw Timber (10" dbh <sup>2</sup> and over)		Smaller Material (4"-9" dbh <sup>2</sup> )			Percent Share of Total Volume of All Species
	Quantity (000 cu. ft.)	Percent Share of Total Volume of All Species	Quantity (000 cu. ft.)	Percent Share of Total Volume of All Species	Quantity (000 cu. ft.)	Percent Share of Total Volume of All Species
Spruce	7,168,616	23.1	24,095,606	46.9	31,264,222	37.9
Jack Pine	4,111,427	13.3	7,735,694	15.0	11,847,121	14.4
Balsam	936,450	3.0	3,858,447	7.5	4,794,897	5.8
Pine (white and red)	2,569,447	8.3	655,061	1.3	3,224,508	3.9
Hemlock	425,720	1.4	133,239	0.3	558,959	0.7
Other Softwoods	811,841	2.6	682,960	1.3	1,494,801	1.8
Total Softwoods	16,023,501		37,161,007		53,184,508	
Hardwoods						
Poplar	7,275,395	23.5	6,942,793	13.5	14,218,188	17.3
Birch (yellow and white)	5,223,141	16.8	6,027,059	11.7	11,250,191	13.6
Maple	1,949,109	6.3	779,126	1.5	2,728,235	3.3
Other Hardwoods	524,479	1.7	507,304	1.0	1,031,783	1.3
Total Hardwoods	14,972,124		14,256,273		29,228,397	
Total, All Species	30,995,625	100.0	51,417,280	100.0	82,412,905	100.0

(1) Figures from Department of Lands and Forests, Ontario.  
(2) Diameter, breast high.

**Table A75—Forest Production, Ontario, 1944-1953**

Products	Volume of Forest Production									
	1944		1945		1946		1947		1948	
	Quantity	% of Total	Quantity	% of Total	Quantity	% of Total	Quantity	% of Total	Quantity	% of Total
	(000 cu. ft.)		(000 cu. ft.)		(000 cu. ft.)		(000 cu. ft.)		(000 cu. ft.)	
Logs and bolts	126,344	27.4	114,464	23.9	143,048	25.3	159,500	26.0	165,960	25.4
Pulpwood	154,415	33.5	177,878	37.1	237,045	42.0	266,973	43.4	288,174	44.1
Fuelwood	164,463	35.6	167,895	35.0	166,978	29.6	170,467	27.8	179,445	27.4
Ties, poles, pilings, posts, etc.	16,285	3.5	19,052	4.0	17,430	3.1	17,679	2.8	20,689	3.1
Total	461,507		479,289		564,501		613,919		654,268	

Products	Volume of Forest Production									
	1949		1950		1951		1952		1953	
	Quantity	% of Total	Quantity	% of Total	Quantity	% of Total	Quantity	% of Total	Quantity	% of Total
	(000 cu. ft.)		(000 cu. ft.)		(000 cu. ft.)		(000 cu. ft.)		(000 cu. ft.)	
Logs and bolts	170,247	26.9	170,562	26.2	173,881	25.0	190,562	26.9	182,983	26.6
Pulpwood	261,705	41.4	271,740	41.8	315,022	45.3	306,316	43.2	283,253	41.2
Fuelwood	179,498	28.4	182,200	28.0	186,041	26.7	192,803	27.2	196,098	28.6
Ties, poles, pilings, posts, etc.	20,752	3.3	26,120	4.0	20,933	3.0	19,732	2.7	24,858	3.6
Total	632,202		650,622		695,877		709,413		687,192	

## The Demand for Timber and the Utilization of the Forest Resources

During the years 1946-1954, there was a considerable degree of stability in the proportions that the volumes cut of each of the 3 principal timber items—namely, pulpwood, logs and bolts, and fuelwood—formed of the total volume of forest production in the Province. The cut of pulpwood, by far the largest in volume, ranged from 42.0 per cent to 45.3 per cent of total forest production. The volume of logs and bolts cut annually—the chief product into which logs are converted is, of course, lumber—varied from 25.0 to 26.9 per cent, while the volume of fuelwood fluctuated between 26.7 and 29.6 per cent of the total volume of timber cut in Ontario. The bulk of the fuelwood cut each year is obtained from private lands. As far as Crown lands are concerned, by far the greatest part of the total cut is that accounted for by pulpwood and logs and bolts.

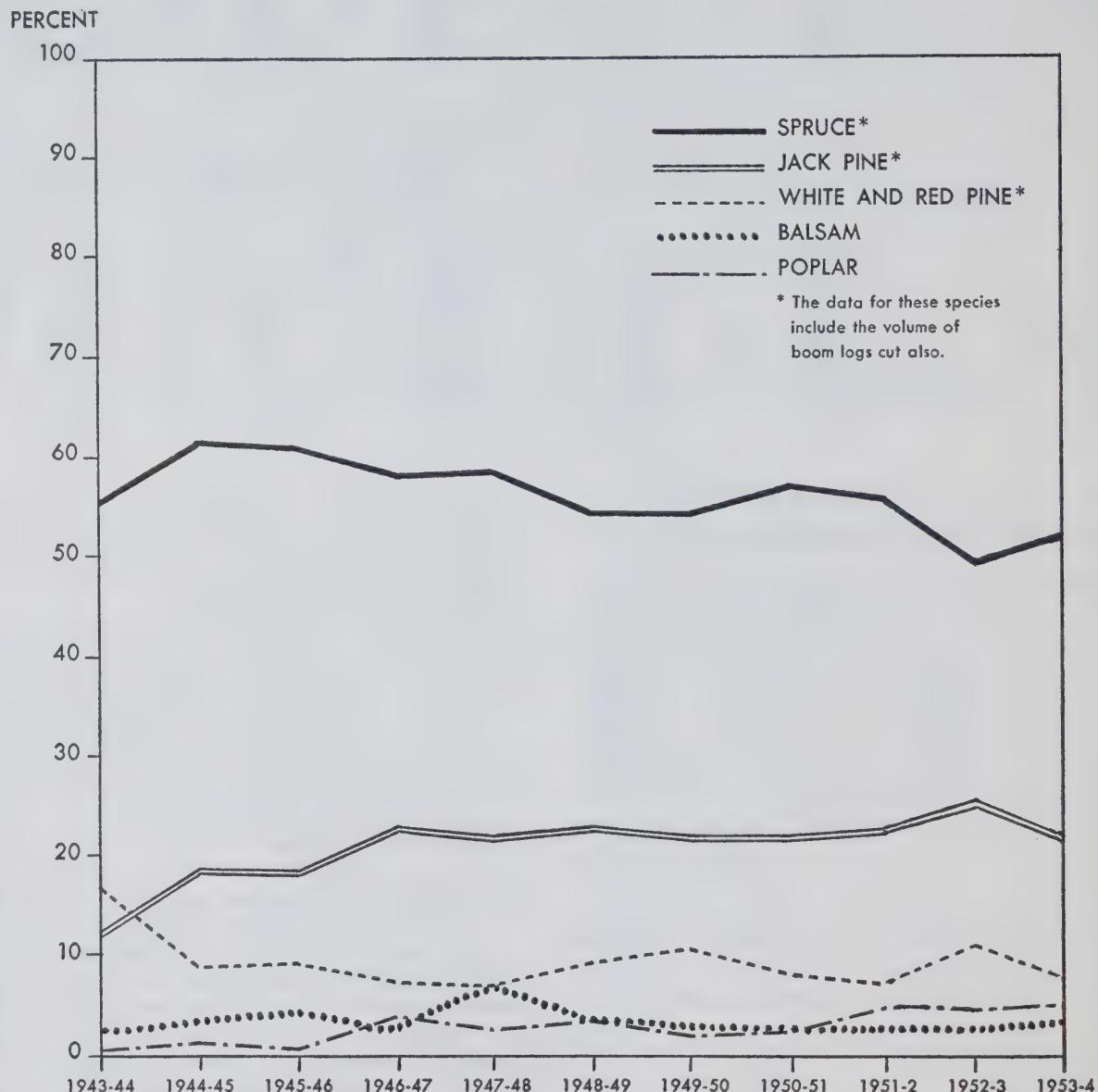
It is, however, unlikely that the above proportions will remain constant during the next 20 years or so. In the first place, the volume of fuelwood cut will, in all probability, decline relatively to the cut of both pulpwood and sawlogs. Secondly, it may

be expected that the proportion which the cut of pulpwood bears to total forest output, or to the total volume of timber cut, will in the future grow; while the proportion of the total cut accounted for by logs and bolts will diminish.

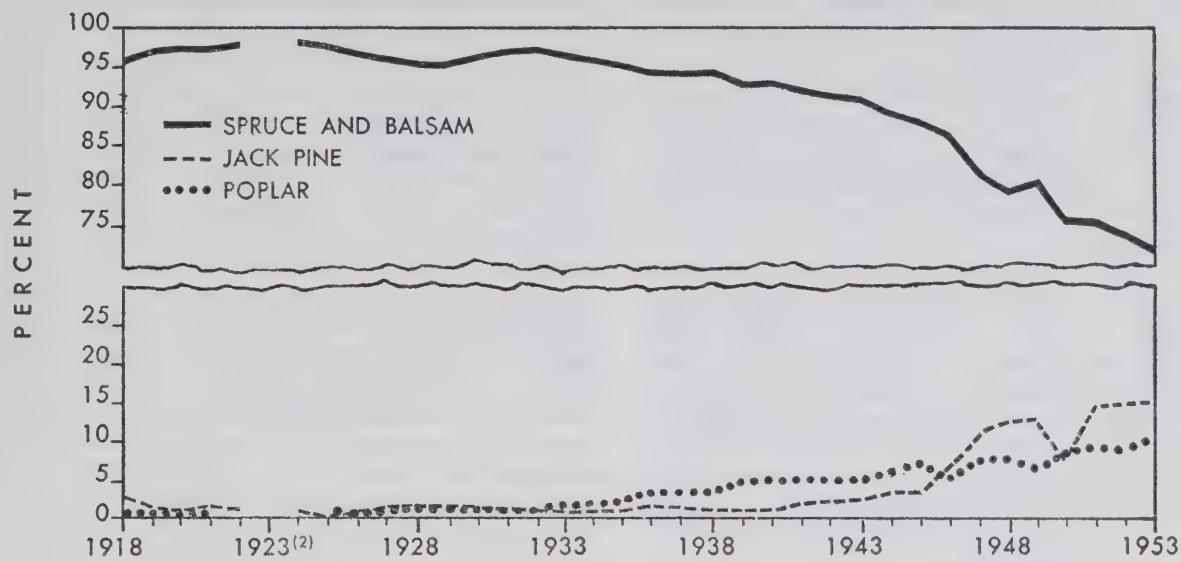
The principal demands made upon the Crown forest resources of Ontario are, therefore, those made by the manufacture of pulp and paper and the manufacture of lumber. The demand for wood for pulping in Ontario has been predominantly a demand for spruce, and to a much lesser, but increasing, extent for jack pine, balsam and poplar as well. The demand for logs and bolts—or, more especially, for sawlogs to be manufactured into lumber—is dependent, to a considerable degree, upon supplies of white pine, spruce and jack pine.

For the past decade, some three-quarters or more of the total annual cut of pulpwood and sawlogs on the Province's Crown lands has been accounted for by the cut of 2 species—spruce and jack pine. The production of white and red pine sawlogs continues, however, to be more important than the output of spruce sawlogs. Moreover, the cut of spruce, for sawlog purposes, ranks behind that of jack pine sawlogs. Spruce, however, continues as the most important pulping species cut on Ontario's Crown lands.

PERCENT OF TOTAL CUT OF SAWLOGS AND PULPWOOD ON ONTARIO  
 CROWN LANDS ACCOUNTED FOR BY SPRUCE, JACK PINE, WHITE  
 AND RED PINE, BALSAM AND POPLAR  
 FISCAL YEARS 1943-44 TO 1953-54



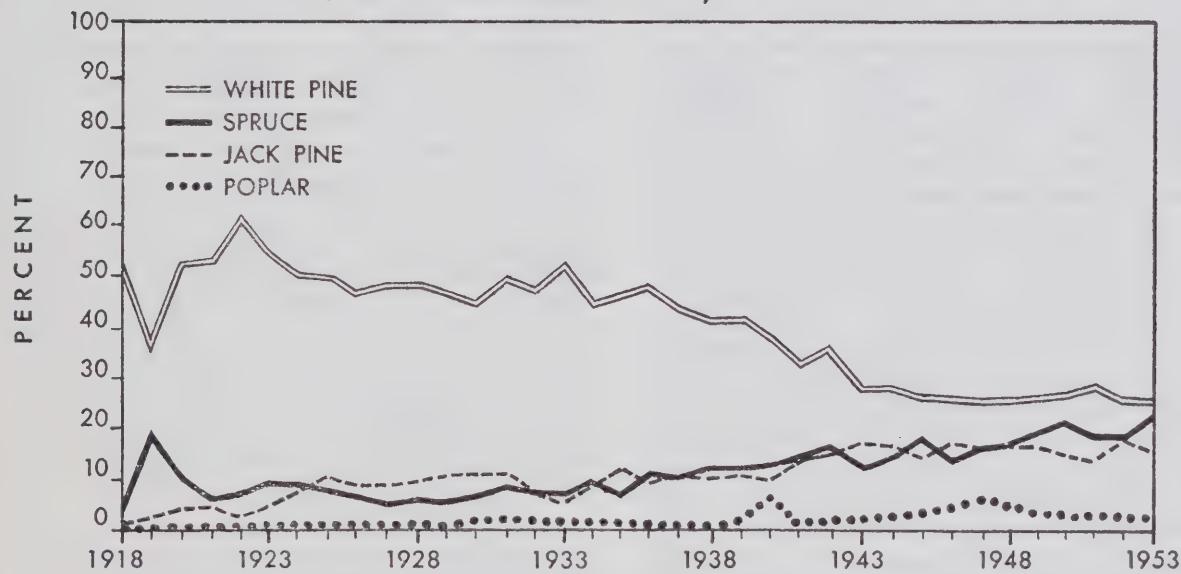
PERCENT OF THE TOTAL VOLUME OF PULPWOOD CONSUMED IN  
ONTARIO ACCOUNTED FOR BY SPRUCE AND BALSAM,  
JACK PINE, AND POPLAR,<sup>(1)</sup> 1917-1953



(1) Less than 0.1 percent in 1922 and 1924.

(2) Not available.

PERCENT OF THE TOTAL VOLUME OF LUMBER MANUFACTURED IN  
ONTARIO ACCOUNTED FOR BY WHITE PINE, SPRUCE,  
JACK PINE AND POPLAR,<sup>(1)</sup> 1918-1953



(1) For 1930, and for all years prior to 1930, poplar and aspen are grouped together.

The pattern of the demand for timber, in the case of both pulpwood and lumber, is, of course, a changing one. To take, first, the case of lumber and wood products in general, it will be noted that white pine lumber has been steadily declining in relative importance, while spruce, jack pine and poplar have all gained somewhat in the proportions they form of the total volume of lumber manufactured. As regards jack pine and poplar, there is discernible a tendency for both of these to supplant higher-priced species—for example, white pine—for many uses in the lumber and wood products industries. In the case of jack pine, there is a noticeable, though gradual, long-term trend towards a greater relative use of this species for lumber purposes. This tendency will probably be strengthened in the future. As far as poplar is concerned, its use as lumber and in various wood products is expanding to a degree which is probably not yet generally appreciated. To cite 2 examples only: poplar is being used in the manufacture of desks and window frames and as a plywood it is coming into its own as never before. Here, therefore, we have instances of poplar being increasingly utilized, where formerly it was thought that only superior species, such as white pine, would do. The immediate future will probably witness an acceleration of this substitution trend.

Similarly, the demand for timber for pulpwood purposes has displayed a degree of change in character, although much less so than in the case of the demand for timber for lumber and wood products in general. In recent years, the principal change has been the increasing use of both jack pine and poplar—especially the former—for pulping. The growing extent, both absolute and relative, to which jack pine is being utilized for pulp-making may be explained as follows. As far as the absolute increase is concerned, jack pine is one of the principal species used in the manufacture of sulphate or kraft pulp in Ontario. The growth of sulphate manufacture in Ontario during the past decade or so has, therefore, imposed greater demands upon the jack pine resources of the Province. Jack pine, moreover, has also shown a tendency to a relative increase in use during the past 9 or 10 years. This growing proportion of jack pine pulpwood consumed to total pulpwood consumed may be accounted for, first of all, by a tendency to the increased use of jack pine in the manufacture of both groundwood and sulphite pulps—the pulps from which newsprint is made. Although jack pine's resin content has, for the present, set limits to the use of this species in

newsprint, future technological advance may well obliterate them. Secondly, if, as now seems likely, the sulphate sector of the pulp and paper industry continues to expand not only absolutely, but relatively as well, the trend towards an increasing relative consumption of jack pine pulpwood would also receive a stimulus from this direction.

Turning now to the increasing relative use of poplar in Ontario as a pulping species, the explanation of this increase in recent years lies in the greater attention which this species has been receiving from the makers of sulphite pulp, and, as with jack pine, in its growing use in the manufacture of sulphate pulp. Poplar still only accounts for a small proportion of the total pulpwood consumed by sulphite makers—but the proportion is growing. Both sulphate and soda manufacture, on the other hand, have been calling for sizeable quantities of poplar pulpwood—in 1954, for example, poplar accounted for almost one-quarter of all pulpwood consumed in the sulphate and soda processes in Ontario. Small quantities of poplar are also being used in groundwood pulp. But progress here has been slow; the proportion of poplar to total pulpwood used in groundwood manufacture has not increased during the past few years. As for the future, the semi-chemical process—as yet scarcely represented in Ontario—might conceivably provide another very important outlet for the utilization of poplar pulpwood. This semi-chemical process can also make use of other so-called lower grade hardwood species besides poplar. This is a development of the utmost importance, since semi-chemical pulps might in the future be used to an increasing extent in the "furnish" of both paper and paperboard.

The various changes in species utilization trends in the lumber and pulp and paper industries obviously have a marked bearing upon the question of maintaining at a high level the harvest of timber from Ontario's forest resources. The inventory of the forest resources of the Province which was completed a few years ago permitted the Department of Lands and Forests to draw up a schedule of annual allowable cuts for the various species occurring on the Crown forest lands of Ontario. The annual allowable cut for any species is defined as that cut which will permit the sustaining of a given level of yield of that species.

Perhaps the most challenging conclusion which emerged from the forest resources inventory and from the schedule of allowable cuts was not that the allowable cut of white pine left little margin for an expanded output of that species but that the

**Table A76—Volume of Sawlogs and Pulpwood Cut on Crown Lands in Ontario,  
1952-53 and 1953-54**

Species	Year ended March 31, 1953						
	Sawlogs			Pulpwood			
	Volume of Sawlogs cut (cu. ft.)	% of Total Volume of Sawlogs	% of total Volume of Sawlogs and Pulpwood for the Species	Volume of Pulpwood Cut (cu. ft.)	% of Total Volume of Pulpwood	% of Total Volume of Sawlogs and Pulpwood for the Species	Total Sawlogs and Pulpwood Cut (cu. ft.)
Balsam	868,119	0.7	7.3	10,991,511	5.5	92.7	11,859,630
Birch	8,622,719	7.6	100.0	—	—	—	8,622,719
Hemlock	5,784,266	5.1	100.0	—	—	—	5,784,266
Maple	3,043,332	2.7	100.0	—	—	—	3,043,332
White and Red Pine	34,237,463	30.3	100.0	—	—	—	34,237,463
Jack Pine	36,591,516	32.6	46.5	42,163,461	21.3	53.5	78,754,977
Poplar	2,971,672	2.6	20.9	11,240,345	5.7	79.1	14,212,017
Spruce	19,733,773	17.5	12.8	133,982,525	67.5	87.2	153,716,298
Other	1,069,363	0.9	100.0	—	—	—	1,069,363
Totals	112,922,223	100.0	45.4	198,377,842	100.0	54.6	311,300,065

Species	Year ended March 31, 1954						
	Sawlogs			Pulpwood			
	Volume of Sawlogs cut (cu. ft.)	% of Total Volume of Sawlogs	% of Total Volume of Sawlogs and Pulpwood for the Species	Volume of Pulpwood Cut (cu. ft.)	% of Total Volume of Pulpwood	% of Total Volume of Sawlogs and Pulpwood for the Species	Total Sawlogs and Pulpwood Cut (cu. ft.)
Balsam	574,363	0.7	4.3	12,648,871	5.6	95.7	13,223,234
Birch	8,588,723	10.3	100.0	—	—	—	8,588,723
Hemlock	4,359,140	5.2	100.0	—	—	—	4,359,140
Maple	2,207,356	2.7	100.0	—	—	—	2,207,356
White and Red Pine	27,460,359	32.9	100.0	—	—	—	27,460,359
Jack Pine	23,753,474	28.5	32.2	49,952,320	22.1	67.8	73,705,794
Poplar	2,287,494	2.7	14.5	13,468,419	6.0	85.5	15,755,913
Spruce	13,408,187	16.1	8.2	149,588,915	66.3	91.8	162,997,102
Other	771,610	0.9	100.0	—	—	—	771,610
Totals	83,410,706	100.0	27.0	225,658,525	100.0	73.0	309,069,231

relatively low ratios of actual cut to allowable cut in the case of jack pine and poplar permit of enormous expansion in the production of these species. Such expansion will, of course, depend on technological improvements and more effective utilization, but it is encouraging that these species, the standing volumes of which allow huge increases in use, are among those with rising actual utilization trend lines.

Favourable shifts in the utilization pattern of the various species are not, however, the only pre-conditions for the maintenance of a high level of forest output. Of equal importance—or perhaps even of greater importance—as props for an expansionist forest output program, are appropriate

forest management policies and high standards of tree and log utilization.

A proper program of forest management may be considered under 3 broad heads. First of all, there is the necessity of making certain that the annual cut of the various species does not exceed the annual yield of these species. This is, of course, an integral part of Government policy. Indeed, the Department of Lands and Forests, having already determined the relationship between utilization and growth, has set out to ensure that the cut of the various species is so distributed throughout the Province's forested area that in no district will the actual cut be in excess of the allowable cut for any commercially valuable species. Secondly, it is

necessary to ensure that the proportion of the cut of mature and over-mature trees of any species to the total cut of that species is such that a proper balance may be introduced into the age composition of the species' standing volume. An excessive ratio of standing volumes of mature and over-mature timber to immature timber in any area not only creates an unbalanced distribution of age classes, but also increases the danger from insect infestation, disease and fire. The Department of Lands and Forests, therefore, places great emphasis upon a satisfactory distribution of age classes for the various species. Thirdly, a proper forest management program and expanded forest output involve making as much of the total allowable cut as possible available for cutting. To assist in the realization of this objective, the Government of Ontario has been giving increased attention to timber access roads.

Other valuable supports for a policy aimed at maintaining a large volume of forest output would, as indicated above, be high standards of tree and log utilization. Although it cannot as yet be said that the various operations involved in the conversion of wood into merchantable products have been marked by drastic reductions in resulting "waste" or in unutilized residuals, it is evident that cutting and processing techniques are becoming more effective as regards both waste reduction and residual utilization. As far as logging operations are concerned, the increasing use of power saws eliminated, to a certain degree, losses due to high stumps. A potential aid to fuller utilization of forest resources has been the development of a new wood bonding

process, which has already been taken up by at least 2 Ontario lumber manufacturers. The bonding of wood, which involves the jointing and gluing together of relatively small pieces so as to form larger components and panels, makes possible the use of smaller material in the lumber and wood products industries generally. As new techniques are adopted on an ever-widening scale, the net result will be a noticeable reduction in the volume of merchantable timber left in the bush as "waste", following logging operations.

Sawmilling, too, has been receiving greater attention, in an effort to reduce waste. In this connection, mention might be made of the construction of gang-mills, and also of the use of band-saws (as against the circular headrig); both of these reduce saw-kerf losses, or, more specifically, the amount of wood substance which is cut to sawdust. Moreover, not only has there been increased concentration upon sawmill waste reduction, but greater attention is being given to the use of mill residuals for making pulp chips. Indeed, the volume of residuals which enters into pulp-making in Ontario is increasing continuously.

Providing, therefore, that there is a continuing favourable shift in the species utilization pattern, a sound timber management program and a gradual raising of standards of wood utilization in both sawmills and pulp and paper mills, the evidence suggests that the total output from the forests can be maintained indefinitely at the high levels of recent years and indeed increased, when the areas which are now inaccessible are brought into operation.

## GOVERNMENT SERVICES IN FORESTRY

**Table A77—Expenditures Allocated to Main Services Rendered, Department of Lands and Forests, Fiscal Years 1945-46, 1950-51, 1954-55**

Service <sup>1</sup>	1945-46		1950-51		1954-55	
	Expenditure	% of Total Expenditure	Expenditure	% of Total Expenditure	Expenditure	% of Total Expenditure
Forest Protection	\$ 2,037,792	49	\$ 3,712,952	38	\$ 5,029,115	39
Timber Management	716,672	17	1,684,563	17	2,356,126	18
Reforestation	430,925	10	1,205,123	12	1,468,568	12
Fish and Wildlife	638,765	15	2,519,318	26	2,742,469	22
Lands and Recreation Areas	386,906	9	718,840	7	1,120,230	9
Total Expenditure <sup>2</sup>	4,210,990	100	9,840,796	100	12,716,508	100

(1) The disbursements of the various Divisions of the Department of Lands and Forests—Forest Protection, Timber Management, Reforestation, Surveys and Engineering, Research, Air Service, Lands and Recreation Areas, Fish and Wildlife, Accounts, and Operation and Personnel—are all distributed among the 5 broad categories of expenditure listed in the table.

(2) The total expenditure in this table is the Ontario Department of Lands and Forests' total expenditure minus sums spent by the Department on the Mississagi Salvage Project and minus payments received under the Canada Forestry Act. Expenditures by the Department of Public Works on various Department of Lands and Forests installations are omitted.

It is intended, in the following section, to treat only those services of the Department of Lands and Forests which are of immediate relevance to the utilization and development of Ontario's timber resources.

## Timber Access Roads

Maintenance of a high level of forest output means, among other things, gradually making more and more of the total allowable cut of the various species of timber—and, most especially, the more remote stands of mature and over-mature timber—available to operations; hence, the importance of timber access roads. Moreover, it should also be pointed out that timber access roads not only make stands of hitherto inaccessible timber available for cutting, but they afford isolated communities access to the Province's highway system, and are of assistance in suppressing forest fires.

From 1945 to the beginning of 1955, the Department of Lands and Forests built 44 roads, totalling some 249 miles in length. The construction costs of these roads varied from \$200 per mile for a wood-lot road in the White River district to almost \$10,500 per mile for the forest access road in the Pembroke district.

It is anticipated that the Department of Lands and Forests' road expenditures during the current fiscal year will amount to about \$150,000 in the case of new construction and about \$27,500 in the case of major repairs and maintenance of existing roads. Recently, the Department of Lands and Forests was provided with a recoverable capital fund of \$500,000 for the building of roads in departmental Timber Management Units.

One approach—presently being explored—to the problem of financing access road construction is a cost-sharing arrangement between the Province and operators willing to cut in Crown timber areas which could be made more accessible by the building of roads. Such, for example, is the joint financing arrangement which has been worked out for a timber access road in the Rainy Lake Management Unit. The proposed road in this instance is to run from Glenorchy to the north boundary of the Turtle Area of the Management Unit.

It is intended that the Government recover its expenditures on the building of access roads by sharing in the enhanced timber values resulting from the construction of these roads (or, more specifically, from the improved accessibility of the stands of timber affected by access roads).

Current discussion of the timber access road question centres around an access road requirement of 2,000 miles and a 20 year construction program. As regards the possible costs, in the immediate future, of building new access roads, recent estimates have placed these costs at \$10,000 to \$15,000 per mile. Maintenance costs have been estimated—again, with reference to the immediate future—at \$200 per mile.

## Surveys

About \$350,000 was spent on aerial and ground surveys during the 1954-55 fiscal year by the Department of Lands and Forests. One phase of the Department's work under this head, which will undoubtedly require additional funds—perhaps \$40,000 per year for the next 10 years—is the carrying out of ground surveys to provide "controls" for mapping from aerial photographs.

## Forest Protection

The various aspects of forest protection in Ontario—all of which are the responsibility of the Department of Lands and Forests' Division of Forest Protection—fall into 2 categories: (1) fire prevention and suppression, and (2) the study and control of insect pests and disease.

Effective fire prevention demands effective publicity and education; and educating the public means an intensive program of illustrated lectures at schools and public meetings, radio broadcasts, reports to news services and newspapers on the current fire situation, erecting highway signs and posters at strategic locations, the use of aerial "loud hailers" in local danger areas and many other educative and preventive activities and devices. Then, too, training programs to instruct both company and department personnel are conducted every year. Finally, special staff has to be maintained to inspect railway locomotive fire appliances.

The actual fire detection and fighting resources must, of necessity, be vast in extent. As of March 31, 1954, these resources included, among other things, more than 40 aircraft (which, however, are used for general transportation, photography, and other purposes besides that of fire detection and suppression), about 300 observation towers, over 3,000 miles of telephone lines, over 1,000 portable power pumps, 49 railway motor cars, 730 trucks, 93 tractors and 61 motor boats—and, of course, during the season of high hazard, a large force of additional fire fighting personnel. The scale on

which fire suppression operations are undertaken may be seen from the fact that over \$700,000 in extra fighting expenses (including salaries, maintenance and operating expenses) were incurred during the fiscal year ended March 31, 1955.

Additions to fire protection equipment and staff which, it is felt, are currently required are 2 more helicopters and an increase in the seasonal ranging staff, all of which will necessitate an expenditure of over \$1.2 million.

As to the insect and disease prevention phases of forest protection, both of these receive constant attention from the Division. Moreover, a close liaison with 2 federal laboratories engaged in research work in the forest insect and disease field is maintained.

### Air Service

Reference has already been made to the fleet of more than 40 aircraft which the Department of Lands and Forests has at its disposal. These aircraft, which are operated by the Department's Air Service Division, are used not only in fire detection and suppression, but, also, in photographic operations, in the work of stocking lakes with live fish and in the performing of all manner of general transport tasks.

During the past few years, 3 new aircraft have been purchased annually, on the average, and it is expected that the annual purchase of aircraft will be on this scale in the years immediately ahead. Air Service disbursements totalled over \$740,000 during the fiscal year which ended March 31, 1955. About \$320,000 of this amount went towards the purchase of new aircraft, maintenance and operating expenses.

### Reforestation

A sound forest resource administration program more often than not necessitates some degree—often a considerable degree—of reforestation. The Reforestation Division of the Department of Lands and Forests furnished over 25.5 million units of nursery stock during the 1954-55 fiscal year—over one million more than in any previous year. Of this total, almost 14.6 million went to private landowners. Over 6.3 million were planted on Crown lands, about 3.2 million in county forests, about 0.3 million in township forests, and over one million in conservation authority forests. Since the demands for nursery stock were still in excess of supply, total nursery stock production targets were maintained at the annual rate of 30 million units.

Assuming that no major change is to be made in the Reforestation Division's appropriation, it is expected that 16 million trees will be planted on Ontario Crown lands (including county forests, etc.) annually, and 19 million will be furnished to private landowners each year, necessitating a nursery production of 35 million trees per annum.

Any increases in the number of trees planted in Crown forest areas will most probably be in the pine producing areas, where the need is most urgent.

It is also anticipated that use will be made of extension foresters to advise and assist landowners with their plantation and woodlot problems. If such a plan is adopted, some increase in staff will probably be necessary.

### Forest Research

Administering the forests on a sustained yield basis is impossible without adequate research facilities. The Department of Lands and Forests is, therefore, through its Research Division, extremely active in the various phases of forest research. Among the more important of these phases are silvicultural and soil research, the study of seed treatment and seedbed preparation, and research in the fields of forest tree breeding and nursery and planting practices. Two areas of study which should possibly be given priority of attention during the next 10 years are (1) regeneration and (2) utilization research. Indeed, the solution of various regeneration problems and the adoption of high standards of tree and log utilization, are all-important for a forest resource utilization program which aims at high levels of forest output.

Present expenditures of the Division on purely forestry research amount to over \$200,000 per annum. In all probability, however, there will be a need in the not-too-distant future—in fact, the need is already present—for greater expenditure on forest research.

### ONTARIO'S FOREST BASED INDUSTRIES

The industries based on the forest may be divided into 2 broad categories:

- (1) The lumber and wood-using group.
- (2) The pulp and paper group.

As regards the wood-using industries, the potential demand for wood shows signs of constant increase and the industries presently using wood can therefore feel confidence in the future.

The pulp and paper group is both a prosperous and an expanding one. The producers are alert and constantly employing research in order to adjust themselves to raw material conditions and to devise new products.

## The Lumber and Wood-using Group

### The Lumber and Related Industries

The key to lumber production in Ontario is the sawmilling industry. It is supplemented by a number of smaller wood processing industries, such as those that produce plywood and veneer, mine timbers, railway ties and a number of other items.

#### The Sawmilling Industry

During the period 1916-1954, peak production occurred in 1917 and the lowest production in the depression year 1932. A steady increase took place from 1939 to 1952, after which we have had only a slight decline.

The recent development of a process for bonding together pieces of lumber should be decidedly conducive to a high level of activity in the industry in the future. By this process, small pieces of lumber may be end and side glued, so as to form panels of almost any desired size. It is a process, moreover, which can be applied to both hardwoods and softwoods. The resulting panels may successfully challenge plywood in furniture and in building and concrete form construction. If this proves to be the case, the sawmilling industry will be in a position to utilize all manner of "smaller material" which might otherwise have gone to waste.

#### The Veneer and Plywood Industry

The veneer and plywood industry is a relative newcomer to the Ontario scene. Prior to World War II, veneer made up the bulk of this production in Ontario, but since that time, plywood has become an increasingly important product. It was not until 1952, however, that the value of production had reached sufficient proportions in Ontario for the Dominion Bureau of Statistics to give separate figures for this Province. However, within one year, 1952-1953, the gross value of production in Ontario increased more than \$3 million.

The importance of the plywood industry to Ontario should not be judged by its relatively small output at the present time. It offers the opportunity of converting much of the fast growing poplar species, which is regenerating in areas

previously covered by other species, into valuable large panels of structural wood. As such, it may be of considerable importance to Ontario.

### Railway Tie Production

In 1953, Ontario captured first place among the provinces in the production of railway ties. A steady and possibly rising demand for this product is anticipated in the future.

### Mine Timber Production

Figures for this item are incomplete, but there appears to have been a great increase in production between 1939 and 1949. Mine timber output has since been maintained at a fairly high level. Ontario, moreover, manufactures the great bulk of mine timbers in Canada, a reflection of the great mining activity carried on in this Province.

## The Wood-using Industries

### The Construction Industry

The principal demand for wood as lumber in Ontario comes from various sectors of the construction industry. This industry, moreover, generates a demand for the products of sash and door mills, hardwood flooring mills and lath mills.

The total value of construction, both building and engineering, in Ontario, has been rising continuously since 1939.

#### (a) *Construction of Dwellings—Single, Double, Duplexes and Apartments*

Of all the various sections of the construction industry, the building of dwellings is the single most important consumer of lumber. It is heartening to note, therefore, that this activity shows a most rapid expansion. It should be observed, however, that the consumption of lumber per dwelling unit has probably declined.

#### (b) *Construction of Industrial and Warehouse Buildings*

The indication is of a generally rising demand for lumber for roofs and so on, although there has been a decline and levelling off in the last 3 years.

#### (c) *Construction of Commercial Buildings*

This sector gives a picture of a gradually increasing level of output, punctuated by intermittent declines.

#### (d) *Construction of Institutional Buildings*

This type of construction shows a gradual but steady rise, which should mean a commensurate rising demand for lumber.

(e) *Construction of Railway, Telephone and Telegraph Facilities*

This group, in which the principal demand for wood is reflected in railway ties and poles, shows a gradual rise from 1939 and a relatively stable demand from 1950 to 1955.

(f) *Marine Construction—Docks, Logging Booms, and so on*

Activity has been at a relatively low level in this sphere since 1939, but the last 2 years have shown a sudden rise to about triple previous levels.

(g) *Construction of Overpasses, Mineshafts, Fences, etc.*

There was a gradual rise to 1953, followed by a slight decline. The principal demand for wood here is that for plywood for concrete forms, mine pit props and rough lumber.

**The Hardwood Flooring and Lath Industries**

The production of hardwood flooring had slumped considerably in the last year of record (1952), although prior to that, it had risen with the general trend of the dwelling construction industry. This may be a reflection of the veering away from the expense of installing such flooring, and the known trend toward the substitution of wall to wall carpeting. Likewise, lath production showed a fall from 190 million feet in 1929 to only 10 million feet in 1951. This reflects the greater use of metal lathing and of plaster wall-board without lathing.

**The Sash, Door and Planing Mill Industry**

The gross value of production in this industry has risen gradually since 1946. It is possible, however, that the sash and door industry is suffering somewhat from the use of metal door and window frames as well as aluminum sashes, the manufacture of which has greatly increased in recent years.

**The Furniture Industry**

The furniture industry in Ontario has shown a gradual but persistent rise in the value of its production in response to the continued increase in residential construction. As long as the latter continues to increase—and population trends indicate it should—the furniture industry may reasonably expect to follow suit and provide an expanding outlet for part of our timber resources.

## **The Pulp and Paper Group**

Because the production of all types of pulp and paper in Ontario is far in excess of its consumption of these products and will probably continue so for many years to come, the prosperity and the expansion of the industry depends upon Canada's export markets. Our greatest customer is, of course, the United States, and our greatest export commodity sold to that country is newsprint. Both newsprint and pulp have been favoured in the United States market since 1914, when the tariffs on these commodities were removed.

### **Ontario Pulp Production**

Changes in the production pattern of pulp may be a response to two distinct causes:

- (1) Species of timber available for pulping.
- (2) Changes in the qualities demanded in paper.

Our best record of changes in the importance of the main pulping processes in Ontario is provided by the numbers of cords of wood, of all species, being consumed by each process. Aside from the gradual and almost parallel increases in the volume of wood consumed by the mechanical and the sulphite processes, the change of major significance has been the sudden spurt in the production of sulphate or kraft pulp after 1945. Analysis shows that this increase was certainly not a result of a shortage of the species required by the other processes, as was the case in the United States. The sulphate process in Ontario has been nurtured on exactly the same species as are being consumed by the mechanical and sulphite processes — spruce, balsam and jack pine. The development of the sulphate process in the United States was due to a shortage of the species (spruce) that could be pulped by other processes. This led to a great deal of research in the 1920's and to the discovery that douglas fir in the West and southern pine in the South could be successfully pulped by the sulphate process. A large new raw material supply thus came into being in the United States. The swing to sulphate in that country has, indeed, been phenomenal, and over half this increase has taken place since 1945. As two-thirds of Canadian sulphate production is exported and as there has been an extraordinary increase in Ontario production since 1945, it may be taken for granted that the increase in this Province is the result of the growing American demand for paper made from sulphate pulp. This paper is of superior strength and is especially suit-

able for wrapping and packaging purposes. A tremendous increase in the use of kraft (sulphate) paper for packaging and wrapping is known to have taken place. A technological development of possibly great significance in the sulphate industry was the adaptation, about a decade and a half ago, of the sulphate process to the use of hardwoods. In this connection, it is to be noted that the northeastern United States has ample supplies of hardwood.

About half of the sulphite production is a response to the demand for newsprint. The other half is a reflection of the normally increasing demand for a strong white pulp for quality paper production in both the United States and Canada.

#### Paper Production in Ontario

From the point of view of both volume and value of production, newsprint still remains by far the most important type of paper produced in Ontario. In 1953, for example, it accounted for 64.3 per cent by volume and 54.8 per cent by value of total paper output in Ontario. Next in importance are paper boards. These amounted to 21.5 per cent by volume and 19.7 per cent by value of Ontario's paper production in 1953. Book and writing paper stood at 8.4 per cent by volume and 14.8 per cent by value of Ontario's paper output in 1953, wrapping paper at 3.1 per cent by volume and 5.7 per cent by value, and tissues at 1.8 per cent by volume and 3.8 per cent by value.

#### Newsprint

The only Canadian paper product which has been completely free to respond to the demands of the all-important U.S. market has been newsprint, as there is no American tariff on this item. During 1955, the consumption of newsprint in the United States rose most markedly. In 1954, newsprint consumption in that country increased only 3 per cent; in the first 9 months of 1955, however, the increase amounted to some 7.8 per cent, and by the last quarter of 1955, newsprint consumption was showing monthly gains of over 9 per cent. At the present time, it is anticipated that the trend of newsprint consumption in the United States will continue in a decidedly upward direction.

The United States is the main but not the only market for Canadian newsprint; since 1950, our overseas exports have shown a steady rise to pre-war levels.

The "furnish" or composition of newsprint consists of 75 to 90 per cent groundwood pulp and the remainder sulphite. Spruce is the main ingredient of groundwood pulp. It was the shortage of this species in the United States which compelled Congress to remove the tariff. Canada, and especially Ontario, has large reserves of spruce and consequently became the chief supplier of groundwood newsprint to the United States. That country, however, has made great efforts to counteract its shortage of spruce by the development of new processes which can make use of other species to produce newsprint and also by the adaptation of older processes to the use of species other than spruce. Important cases in point here are the semi-chemical pulping process and the more recently developed chemi-groundwood process; both of these permit the use of the extensive stands of hardwood available in the northeastern United States. Then, too, the groundwood process has been adapted to the use of southern pine. It is unlikely, however, that either of these developments poses a dire threat to the Ontario newsprint industry; productive capacity in the United States will—for an almost indefinite period in the future, if not for ever—fall far short of satisfying the demand for newsprint in that country. Canada, therefore, will undoubtedly remain the major supplier of newsprint to the United States.

#### Other Papers

Chief among other papers produced in Ontario are the various kinds of paper board, book and writing paper, and wrapping papers. During the past decade and a half, all of these—and especially paper boards—have displayed some tendency to form an increasing proportion of the Province's total paper output. This broadening of the base of production in the Ontario paper industry is decidedly a most welcome development, not only from the point of view of viability in the industry, but also from that of a balanced program of forest resource utilization.



## APPENDIX IX

# The Hydro-Electric Power Commission of Ontario

### INTRODUCTION

In June, 1956, the Hydro-Electric Power Commission of Ontario will complete the 50th year since its inception. October 11 will be the 46th anniversary of the occasion celebrating the first delivery of power to the City of Kitchener in 1910. The intervening years, which have seen remarkable strides in industrial, social, and scientific developments, have brought to the Commission a comparable and equally remarkable expansion. Through all the changes that this has involved, the fundamental purpose of the organization, now generally known as Ontario Hydro, has remained unchanged.

The Commission was set up to ensure that the power resources of the Province would be used for the benefit of all the people of Ontario. It was created by the Ontario Legislature following recommendations by advisory commissions that power from water resources, and from the Niagara River in particular, should be developed and made available to municipalities at reasonable cost. Ontario Hydro now provides about 90 per cent of the total primary energy supplied by central electric stations for consumption in Ontario. In 1955, it operated 65 hydro-electric and 2 major fuel-electric generating stations. It purchases power from other producers and its systems are interconnected with neighbouring systems.

The municipalities that signed the first contracts with the Commission required in total 4,000 kilowatts in 1910. In 1955, the customers of the Commission—municipal, industrial, and rural—required more than 4.2 million kilowatts. The total number of ultimate customers served was over 1½ million. With the exception of about 200 of these, who were direct industrial customers of the Commission, these ultimate customers were served through the facil-

ties of 342 municipal utilities, 30 Commission-owned local systems, and 105 rural operating areas.

This growth in load and number of customers served reflects the expansion of the Commission's operations throughout virtually the whole populated area of the Province. To the original Niagara System and the Thunder Bay System inaugurated shortly afterwards was added a number of other systems, established to serve groups of municipalities in various sections of the Province. In the south, the smaller systems were consolidated by 1944 into the Southern Ontario System. In the north, apart from the facilities of the former Thunder Bay System, the properties acquired and constructed by the Commission have been held and operated in trust for the Province of Ontario.

The Province as a whole, for administrative purposes, is divided into 9 regions, 7 of which comprise the Southern Ontario System. Two regions, the Northeastern and Northwestern Regions, form the administrative and financial unit known as Northern Ontario Properties. The Southern Ontario System, the Northeastern Region and the Northwestern Region, in order to make most efficient and economical use of resources, are each fully integrated operating systems. The Southern Ontario System is interconnected with the Northeastern Region and, in turn, with neighbouring systems both in Quebec and in the United States.

Over the period 1922-1955, primary power requirements have increased at a rate equivalent to 6.56 per cent per annum. The period of growth at a somewhat faster rate until 1930 was succeeded by a relatively sharp decline and this in turn by a period of slowly accelerating growth until 1941. In the following years, when loads were at times subject to restrictions, voluntary or imposed, demands alternately spurted ahead and levelled off.

During the late 1930's and the years of the war, the Commission provided for growing demands by increasing both its generating facilities and its purchases of power. After 1945, it undertook to meet rising power requirements almost entirely by an aggressive program of construction.

## FUTURE DEMAND AND RESOURCES

Future demands are presented on the accompanying graph on the basis of two estimates. As far as 1960, the upper projection is based on the rate of growth experienced between 1950 and 1955, equivalent to 8.21 per cent per annum, and the lower projection is based on estimates of growth at a rate equivalent to 5.50 per cent per annum. After 1960, both projections assume a rate of growth to 1980 equivalent to the 6.56 per cent per annum established between 1922 and 1955. On the higher estimate, requirements will be 6,159,000 kilowatts in 1960 and 21,947,000 kilowatts in 1980; on the lower estimate, these requirements will be 5,425,000 and 19,332,000 kilowatts respectively.

Estimates of capability assume that all hydro-electric projects now under construction<sup>1</sup> will be completed by 1960 and that, in addition, there will be in service about 25 or 30 per cent of the 1.3 million kilowatts of hydro-electric capacity that remain to be developed. Only 6 of the remaining hydro-electric potential sources of power will exceed 50,000 kilowatts and these, together with Units 15 and 16 at Sir Adam Beck-Niagara Generating Station No. 2, amount to 515,000 kilowatts, or 40 per cent of the total potential. The other 60 per cent is distributed among a number of small sites, mostly in northern Ontario. The estimates for 1960 include the addition of a 200,000-kilowatt unit at Richard L. Hearn Generating Station (Toronto) and a Nuclear Power Demonstration plant.

The rapid developments that are taking place in nuclear studies suggest that by 1965 a large part of the required additional capacity will be provided from nuclear resources. The Commission has maintained a close liaison with authorities engaged in research, both in Great Britain and in the United States, concerning the feasibility of producing electric power from nuclear sources. During the past

3 years, studies have also been undertaken in association with Atomic Energy of Canada Limited, and plans are now being developed in conjunction with that Crown company and with the Canadian General Electric Company Limited for the design and construction of a 20,000-kilowatt nuclear power station near Des Joachims Generating Station on the Ottawa River.

Nuclear energy will be used to produce steam, which in turn will be used to generate electricity in a conventional steam-electric station. The electricity produced will be supplied to the Southern Ontario System. Although the demonstration plant may not be competitive with conventional fuel-electric stations, it is expected that its operation will provide valuable data for the design, construction, and operation of larger installations. In estimating resources available in 1965, it has been assumed that by that year nuclear fuel-electric stations will be economical for base-load operation.

Through the recent years of rapid growth in power requirements, the Commission has continued to make substantial purchases of power from other suppliers but only the most aggressive pursuance of its construction program would serve to meet the needs of the Province. Nine new hydro-electric and 2 major fuel-electric generating plants have been constructed and 4 hydro-electric developments are now under construction. In terms of dependable peak capacity, these new resources have contributed to increasing the capacity of the Commission's own generating stations from 1,230,000 kilowatts in 1945 to 3,846,000 kilowatts in 1955, and further construction will add from about 1.5 million to about 2.2 million kilowatts in the next 5 years. This means that the construction achievement of the past 10 years has more than trebled the accomplishments of the preceding 35 years, and the program for the next 5 years may very nearly equal the achievement of the 41 years between 1910 and 1951.

## FINANCING AND ASSETS

The Commission's capital expansion throughout has been financed for the most part through the issue of debentures either by the Province or by the Commission, whose debentures are guaranteed by the Province as to principal and interest. The increasing value of fixed assets reflects the rapid expansion of generating facilities during the past 10 years. Between 1930 and 1945, the value of these assets rose by about \$127 million, from \$263 million to \$390 million. By 1955, they were valued at about

<sup>1</sup> Projects now under construction are as follows:

Southern Ontario—Sir Adam Beck-Niagara Generating Station No. 2 (pumped-storage scheme and Units 13 and 14) and the St. Lawrence Power Project.

Northwestern Ontario—Manitou Falls Generating Station (English River) and Whitedog Falls Generating Station (Winnipeg River).

\$1,560 million, or 4 times the 1945 value. In addition to the capital expenditure on these assets, the Commission has spent some \$246 million on the standardization of frequency in certain areas of the Southern Ontario System. Internal resources of the Commission have provided some funds both for capital and for frequency standardization expenditure. In the main, however, the cost of additional fixed assets has been financed by the issue of debentures, a total of \$1,195 million having been issued during the past 10 years either for new capital or for refunding purposes. Early in January, 1956, a further \$65 million in debentures was issued, raising the total since the end of World War II to about \$1½ billion.

The Commission's fixed assets include rural distribution facilities, amounting to about \$199 million in 1955. In pursuance of a policy of assisting agriculture, the Province contributed during the past 35 years about \$99 million toward the capital cost of these facilities, of which \$77 million was provided in the last 10 years.

### RURAL SERVICE

Expansion of rural service has played an important part in the development of the rural economy. The growth in facilities, number of customers served and loads supplied has been truly remarkable in recent years. The total miles of primary line has doubled during the last 10 years, reaching 43,800 miles in 1955, and the corresponding total number of customers has doubled in a little over 7 years, to reach 419,000 at the end of 1955. With increasing mechanization on the farm, total con-

sumption by farm service customers increased five-fold during the 10-year period 1944-1954. Hamlet and commercial service customers in the rural areas have shown even more spectacular growth in consumption during the same period. This increase in the use of power made available by the Commission was one of the significant factors in enabling Ontario farmers to expand the value of their production despite a decline in the labour force during the years 1946-1953.

### SUMMARY

The facilities of the Commission have been expanding in recent years at a rate unprecedented in its history, in order to keep pace with the advancing requirements of all classes of customers. The increase in consumption in rural areas, to which reference has been made, is matched by similar increases by urban customers—domestic, commercial, and power. The total number of ultimate customers in Ontario served directly or indirectly by the Commission increased from 865,000 in 1945 to 1,467,000 in 1954. The total primary kilowatt-hours consumed in 1954 were almost double the total consumed in 1945. Continued growth in number of customers and in consumption per customer is taken into consideration in the estimates of requirements for power as set out for the years 1956-1980. The achievements of the Commission in meeting such requirements in the past and its program for meeting them in the future are indicative of the invaluable contribution which it is making to the expanding economy of the Province.

**Table A78—Primary Power Requirements,  
All Systems Combined, The Hydro-Electric  
Power Commission of Ontario, 1922 to 1955,  
Inclusive**

Year (December)	Kilowatts	Year (December)	Kilowatts
1922	509,500	1940	1,482,800
1923	554,100	1941	1,670,200
1924	593,600	1942	1,691,800
		1943	1,752,000
1925	660,600	1944	1,780,300
1926	704,100		
1927	742,000	1945	1,852,000
1928	846,900	1946	2,118,700
1929	911,800	1947	2,308,100
		1948	2,438,900
1930	865,600	1949	2,489,600
1931	808,300		
1932	808,900	1950	2,799,000
1933	849,000	1951	3,109,000
1934	897,100	1952	3,278,300
		1953	3,487,700
1935	947,100	1954	3,701,600
1936	1,037,600		
1937	1,113,500	1955	4,151,000 (Est.)
1938	1,210,900		
1939	1,338,800		

Equivalent Rate of Growth—6.56 per cent per annum.

Note: 1922 to 1929 inclusive, adjusted to include the Dominion Power and Transmission Company acquired by the Commission in 1930.

Primary power requirements equal to actual load carried plus cuts to industrial customers supplied directly by the Commission and the estimated effect of restrictions, allocations, and voluntary curtailment in the supply of power to all classes of customers.

**Table A79—Estimates of Future Primary  
Power Requirements, All Systems Combined,  
The Hydro-Electric Power Commission of  
Ontario, 1956 to 1980, Inclusive**

Year (December)	Higher Estimate (A) (Kilowatts)	Lower Estimate (B) (Kilowatts)
	Application of 1950-1955 equivalent rate of growth (8.21% per annum)	By Commission's Advisory Committee on Load and Capacity (equivalent rate of growth—5.50% per annum)
1956	4,492,000	4,407,000
1957	4,861,000	4,692,000
1958	5,260,000	4,954,000
1959	5,691,000	5,166,000
1960	6,159,000	5,425,000
	Application to above estimates of 1922-1955 equivalent long-term rate of growth (6.56% per annum)	
1961	6,563,000	5,781,000
1962	6,993,000	6,160,000
1963	7,452,000	6,564,000
1964	7,941,000	6,995,000
1965	8,462,000	7,454,000
1966	9,017,000	7,943,000
1967	9,608,000	8,464,000
1968	10,239,000	9,019,000
1969	10,910,000	9,611,000
1970	11,626,000	10,241,000
1971	12,389,000	10,913,000
1972	13,201,000	11,629,000
1973	14,067,000	12,392,000
1974	14,990,000	13,204,000
1975	15,974,000	14,071,000
1976	17,021,000	14,994,000
1977	18,138,000	15,977,000
1978	19,328,000	17,025,000
1979	20,596,000	18,142,000
1980	21,947,000	19,332,000

**Table A80—Dependable Peak Capacity, All Systems Combined, The Hydro-Electric Power Commission of Ontario, 1922 to 1955, Inclusive**

Year (December)	Commission's Generating Stations		Power Purchased (Kilowatts)	Total Resources (Kilowatts)
	Hydro-Electric (Kilowatts)	Fuel-Electric (Kilowatts)		
1922	496,900	20,000	34,000	550,900
1923	555,800	20,000	30,000	605,800
1924	644,200	20,000	33,000	697,200
1925	727,300	20,000	34,000	781,300
1926	737,400	20,000	37,000	794,400
1927	733,400	20,000	40,000	793,400
1928	737,400	20,000	101,000	858,400
1929	752,700	20,000	157,000	929,700
1930	782,500	0	245,000	1,027,500
1931	820,500	0	309,600	1,130,100
1932	848,500	0	369,900	1,218,400
1933	937,500	0	407,100	1,344,600
1934	925,500	0	454,500	1,380,000
1935	976,400	0	212,700	1,189,100
1936	979,900	0	196,700	1,176,600
1937	1,000,700	0	380,700	1,381,400
1938	1,058,700	0	454,800	1,513,500
1939	1,058,700	0	499,800	1,558,500
1940	1,064,700	0	514,300	1,579,000
1941	1,054,800	0	618,700	1,673,500
1942	1,091,800	0	674,700	1,766,500
1943	1,167,800	0	674,700	1,842,500
1944	1,157,800	0	665,700	1,823,500
1945	1,229,900	0	707,600	1,937,500
1946	1,236,500	300	750,000	1,986,800
1947	1,298,100	300	775,000	2,073,400
1948	1,409,200	600	756,000	2,165,800
1949	1,444,600	43,600	794,000	2,282,200
1950	1,912,100	53,500	764,700	2,730,300
1951	2,035,250	202,300	704,200	2,941,750
1952	2,220,550	444,300	688,500	3,353,350
1953	2,229,950	652,500	682,900	3,565,350
1954	3,001,350	450,500	683,200	4,135,050
1955	3,208,600	637,000	685,400	4,531,000

Note: 1922 to 1929 inclusive, adjusted to include the Dominion Power and Transmission Company acquired by the Commission in 1930.

**Table A81—Higher Estimates of Dependable Peak Capacity, All Systems Combined, The Hydro-Electric Power Commission of Ontario, 1956 to 1980, Inclusive**

**Capacity Required to Meet Higher Estimates of Future Primary Power Requirements (Designated A on Chart) and Provide a Margin of Reserve of About 7 Per Cent**

Year (December)	Commission's Generating Stations			Power Purchased (Kilowatts)	Total Resources (Kilowatts)
	Hydro-Electric (Kilowatts)	Fuel-Electric Conventional (Kilowatts)	Nuclear (Kilowatts)		
1956	3,258,000	637,000	—	645,000	4,540,000
1957	3,683,000	637,000	—	645,000	4,965,000
1958	4,209,000	826,000	18,000	623,000	5,676,000
1959	4,481,000	1,026,000	18,000	608,000	6,133,000
1960	4,622,000	1,426,000	18,000	608,000	6,674,000
1961	4,717,000	1,726,000	18,000	601,000	7,062,000
1962	4,848,000	2,026,000	18,000	601,000	7,493,000
1963	5,040,000	2,326,000	18,000	601,000	7,985,000
1964	5,052,000	3,039,000	18,000	601,000	8,710,000
1965	5,110,000	3,039,000	418,000	601,000	9,168,000
1966	5,217,000	3,039,000	931,000	601,000	9,788,000
1967	5,250,000	3,339,000	1,131,000	601,000	10,321,000
1968	5,270,000	3,339,000	1,844,000	601,000	11,054,000
1969	5,290,000	3,639,000	2,244,000	601,000	11,774,000
1970	5,333,000	4,239,000	2,644,000	269,000	12,485,000
1971	5,353,000	4,952,000	2,844,000	187,000	13,336,000
1972	5,412,000	5,252,000	3,444,000	187,000	14,295,000
1973	5,442,000	5,852,000	3,757,000	187,000	15,238,000
1974	5,485,000	6,452,000	3,957,000	187,000	16,081,000
1975	5,485,000	7,052,000	4,470,000	187,000	17,194,000
1976	5,485,000	7,765,000	5,070,000	0	18,320,000
1977	5,485,000	8,365,000	5,783,000	0	19,633,000
1978	5,485,000	8,965,000	6,183,000	0	20,633,000
1979	5,485,000	9,565,000	7,096,000	0	22,146,000
1980	5,485,000	10,578,000	7,496,000	0	23,559,000

Note: Nuclear resources are based on the assumption that by 1965 nuclear fuel-electric stations will be economical for base load operation.

**Table A82—Lower Estimates of Dependable Peak Capacity, All Systems Combined, The Hydro-Electric Power Commission of Ontario, 1956 to 1980, Inclusive**

**Capacity Required to Meet Lower Estimates of Future Primary Power Requirements (Designated B on Chart) and Provide a Margin of Reserve of About 7 Per Cent**

Year (December)	Commission's Generating Stations				Total Resources (Kilowatts)
	Hydro-Electric (Kilowatts)	Fuel-Electric Conventional (Kilowatts)	Nuclear (Kilowatts)	Power Purchased (Kilowatts)	
1956	3,258,000	637,000	—	645,000	4,540,000
1957	3,683,000	637,000	—	645,000	4,965,000
1958	4,175,000	826,000	18,000	623,000	5,642,000
1959	4,208,000	826,000	18,000	608,000	5,660,000
1960	4,488,000	826,000	18,000	608,000	5,940,000
1961	4,570,000	1,026,000	18,000	601,000	6,215,000
1962	4,663,000	1,426,000	18,000	601,000	6,708,000
1963	4,741,000	1,726,000	18,000	601,000	7,086,000
1964	4,900,000	2,026,000	18,000	601,000	7,545,000
1965	5,046,000	2,026,000	418,000	601,000	8,091,000
1966	5,051,000	2,439,000	618,000	601,000	8,709,000
1967	5,109,000	2,439,000	1,018,000	601,000	9,167,000
1968	5,209,000	2,739,000	1,018,000	601,000	9,567,000
1969	5,242,000	3,039,000	1,531,000	601,000	10,413,000
1970	5,242,000	3,639,000	1,731,000	269,000	10,881,000
1971	5,272,000	3,939,000	2,244,000	187,000	11,642,000
1972	5,292,000	4,239,000	2,644,000	187,000	12,362,000
1973	5,312,000	4,652,000	3,044,000	187,000	13,195,000
1974	5,342,000	5,252,000	3,244,000	187,000	14,025,000
1975	5,362,000	5,852,000	3,757,000	187,000	15,158,000
1976	5,362,000	6,452,000	4,270,000	0	16,084,000
1977	5,391,000	7,052,000	4,670,000	0	17,113,000
1978	5,421,000	7,765,000	5,070,000	0	18,256,000
1979	5,421,000	8,365,000	5,583,000	0	19,369,000
1980	5,484,000	9,265,000	5,983,000	0	20,732,000

Note: Nuclear resources are based on the assumption that by 1965 nuclear fuel-electric stations will be economical for base load operation.

## **Note on the Classes of Power Sold by The Hydro-Electric Power Commission of Ontario**

The Commission supplies three classes of primary power, namely—firm, interruptible, and at-will. In addition to these, a class of power known as secondary is supplied from time to time. Interruptible, at-will, and secondary power are supplied only to direct industrial customers of the Hydro-Electric Power Commission, whereas firm power is supplied to municipalities, rural, and direct customers.

### **Firm Power**

**FIRM POWER IS COMMERCIALLY CONTINUOUS FOR 24 HOURS A DAY AND 365 DAYS A YEAR, WITH NO PROVISION FOR INTERRUPTION EXCEPT FOR REPAIRS DURING EMERGENCY, "ACTS OF GOD", OR THE PROTECTION OF LIFE OR PROPERTY.**

The magnitude of a system load which is comprised entirely of loads covered by firm power agreements is subject to wide seasonal variations, being at its lowest level in mid-summer and reaching its highest peak value in mid-winter. In addition to this seasonal variation, the magnitude of this firm load varies through wide limits over the 24 hours of the day, being at its lowest levels between midnight and 7 a.m. and reaching its peak between 11 a.m. and 12 noon in summer and between 5 and 6 p.m. in winter.

As a result of these variations, an appreciable proportion of the total resources which must be installed in order to meet the winter firm peak would remain idle and non-revenue producing throughout the remainder of the year if only firm power were sold. Since this winter peak lasts for only a few hours during the week-days of the heaviest load months of the year, it is highly desirable to find loads which, during off-peak periods, will utilize that portion of the equipment which is not required for firm load.

### **Interruptible Power**

**INTERRUPTIBLE POWER IS THE SAME AS FIRM POWER EXCEPT THAT DURING THOSE MONTHS WHEN THE FIRM POWER LOAD IS HEAVIEST, IT MAY BE INTERRUPTED FOR PERIODS NOT EXCEEDING A SPECIFIED DURATION IN ANY ONE DAY NOR A TOTAL IN ANY MONTH OF A SPECIFIED PERCENTAGE OF THE TOTAL HOURS IN THAT MONTH.**

Interruptible power is sold to certain types of heavy power-consuming industries whose processes are such that a major portion of their load can be interrupted for periods of a few hours in any day without any serious effect upon the quality of their product. These industries belong to a

class in which power costs represent a high proportion of the total cost of their product and they are prepared to accept the loss of production occasioned by interruption of their power supply over the periods of peak firm power demand in return for the opportunity of buying interruptible power at slightly lower than firm power prices.

### **At-Will Power**

**AT-WILL POWER IS USUALLY SUPPLIED ON A SHORT TERM BASIS OF ONE YEAR OR LESS, AND DELIVERY MAY BE INTERRUPTED IN WHOLE OR IN PART AT ANY TIME AND FOR ANY LENGTH OF TIME.**

Under normal conditions, it is customary to have reserve resources to take care of growth of firm load and also to provide a standby against the possibility of failure of major equipment. During the period that these resources are in reserve waiting to be absorbed by firm load growth, their output is available for sale on a short-term basis, provided that as a condition of sale, the supply may be discontinued without notice; this requirement is particularly essential in the event of failure in service of equipment.

This class of power is sold to certain heavy power-consuming industries who do not wish to undertake long-term firm power commitments and in return for the advantage to them of a short-term commitment, are prepared to accept the risks of interruption entailed. The price for this class of power is comparable to that for interruptible power.

### **Secondary Power**

**SECONDARY POWER IS "DUMP" POWER WHICH IS SOLD ON THE BASIS OF "AS AND WHEN AVAILABLE" IN THE SOLE DISCRETION OF THE SUPPLIER AND "AS AND WHEN REQUIRED" BY THE CONSUMER.**

At certain times throughout the year, such as during and immediately following the spring freshets and after abnormally heavy rainfalls, the capacity of the system resources rises to abnormally high values with the result that energy is available in quantities which exceed any planned combination of firm, interruptible, and at-will loads.

Also, on most week-ends, holidays and during certain hours of the night, energy in excess of that required to meet firm, interruptible, and at-will loads is available.

Whenever possible, this energy is sold in the secondary market where it is used for the generation of steam in electric steam generators, or by inter-connected systems to replace energy which would otherwise have to be produced on coal-fired steam generating plants.

**Note on the Classes of Power Sold by The Hydro-Electric Power Commission of Ontario**

The Commission supplies three classes of primary power, namely, firm, interruptible, and at-will. In addition to these, a class of power known as "as and when" is supplied from time to time. Interruptible, at-will, and "as and when" power are supplied only to direct industrial customers of the Hydro-Electric Power Commission, whereas firm power is supplied to municipalities, rural, and direct customers.

**Firm Power**

FIRM POWER IS COMMERCIALLY CONTINUOUS FOR 24 HOURS A DAY AND 365 DAYS A YEAR, WITH NO PROVISION FOR INTERRUPTION EXCEPT FOR REPAIRS DURING EMERGENCY, "ACTS OF GOD", OR THE PROTECTION OF LIFE OR PROPERTY.

The magnitude of system load which is comprised entirely of loads covered by firm power agreements is subject to wide seasonal variation, being lowest in mid-summer and reaching its highest peak value in mid-winter. In addition to this seasonal variation, the magnitude of this firm load varies through wide limits over the 24 hours of the day, being at its lowest levels between midnight and 7 a.m. and reaching its peak between 11 a.m. and 12 noon in summer and between 5 and 6 p.m. in winter.

An estimate can be made of the relative proportion of the total resources which must be installed in order to meet the winter firm peak would remain idle and non-revenue producing throughout the remainder of the year if only firm power were sold. Since this winter peak lasts for only a few hours during the week-days of the heaviest load months of the year, it is highly desirable to find loads which, during off-peak periods, will utilize that portion of the equipment which is not required for firm load.

**Interruptible Power**

INTERRUPTIBLE POWER IS THE SAME AS FIRM POWER EXCEPT THAT DURING THOSE MONTHS WHEN THE FIRM POWER LOAD IS HEAVIEST, IT MAY BE INTERRUPTED FOR PERIODS NOT EXCEEDING A SPECIFIED DURATION IN ANY ONE DAY NOR A TOTAL IN ANY MONTH OF A SPECIFIED PERCENTAGE OF THE TOTAL HOURS IN THAT MONTH.

Interruptible power is sold to certain types of heavy power-consuming industries whose processes are such that a major portion of their load can be interrupted for periods of a few hours in any day without any serious effect upon the quality of their product. These industries belong to a

class in which power costs represent a high proportion of the total cost of their product and they are prepared to accept the loss of production occasioned by interruption of their power supply over the periods of peak firm power demand in return for the opportunity of buying interruptible power at slightly lower than firm power prices.

**At-Will Power**

AT-WILL POWER IS USUALLY SUPPLIED ON A SHORT TERM BASIS OF ONE YEAR OR LESS, AND DELIVERY MAY BE INTERRUPTED IN WHOLE OR IN PART AT ANY TIME AND FOR ANY LENGTH OF TIME

Under normal conditions, it is customary to have reserve resources to take care of growth of firm load and also to provide a standby against the possibility of failure of major equipment. During the period that these resources are in reserve waiting to be absorbed by firm load growth, their output is available for sale on a short-term basis, provided that as a condition of sale, the supply may be discontinued without notice; this requirement is particularly essential in the event of failure in service of equipment.

The class of power users consists of heavy power-consuming industries who do not want to undertake long-term firm power commitments and in return for the advantage to them of a short-term commitment, are prepared to accept the risks of interruption entailed. The price for this class of power is comparable to that for interruptible power.

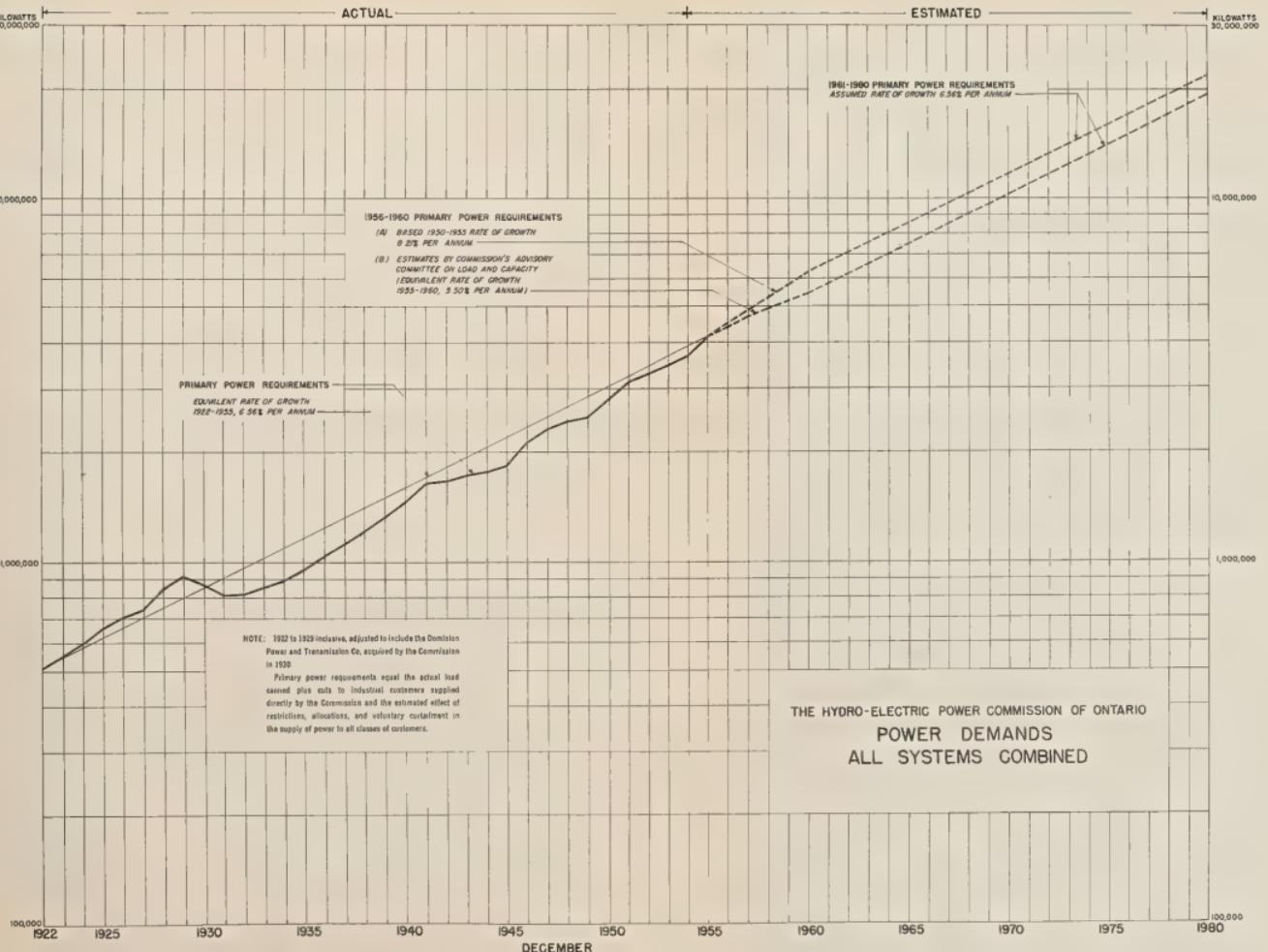
**Secondary Power**

SECONDARY POWER IS "DUMP" POWER WHICH IS SOLD ON THE BASIS OF "AS AND WHEN AVAILABLE" IN THE SOLE DISCRETION OF THE SUPPLIER AND "AS AND WHEN REQUIRED" BY THE CONSUMER.

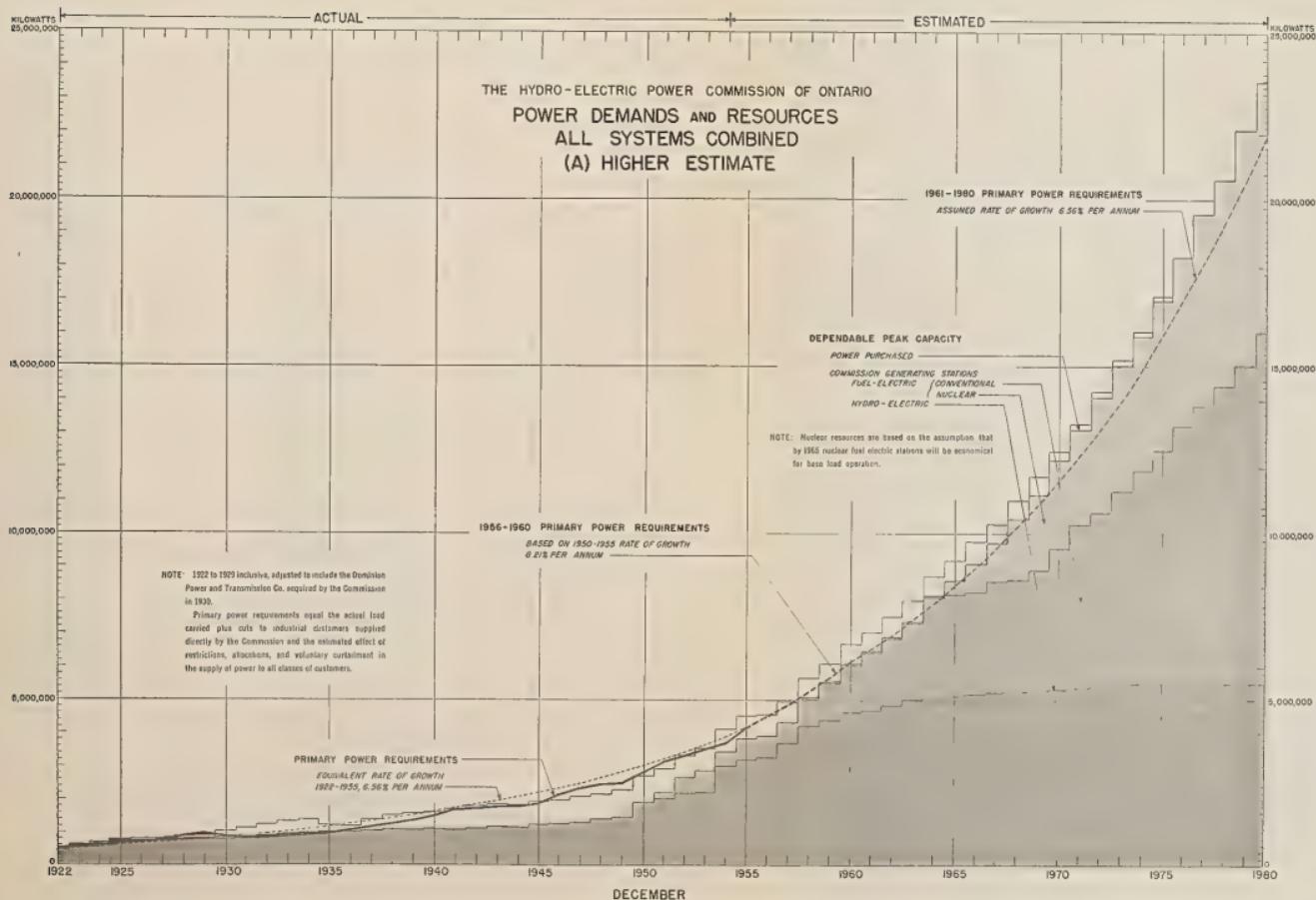
At certain times throughout the year, such as during and immediately following the spring freshets and after abnormally heavy rainfall, the capacity of the system resources to abnormally high values with the result that energy is available in quantities which exceed any planned combination of firm, interruptible, and at-will loads.

Also, on most week-ends, holding over during certain hours of the night, energy in excess of that required to meet firm, interruptible, and at-will loads is available.

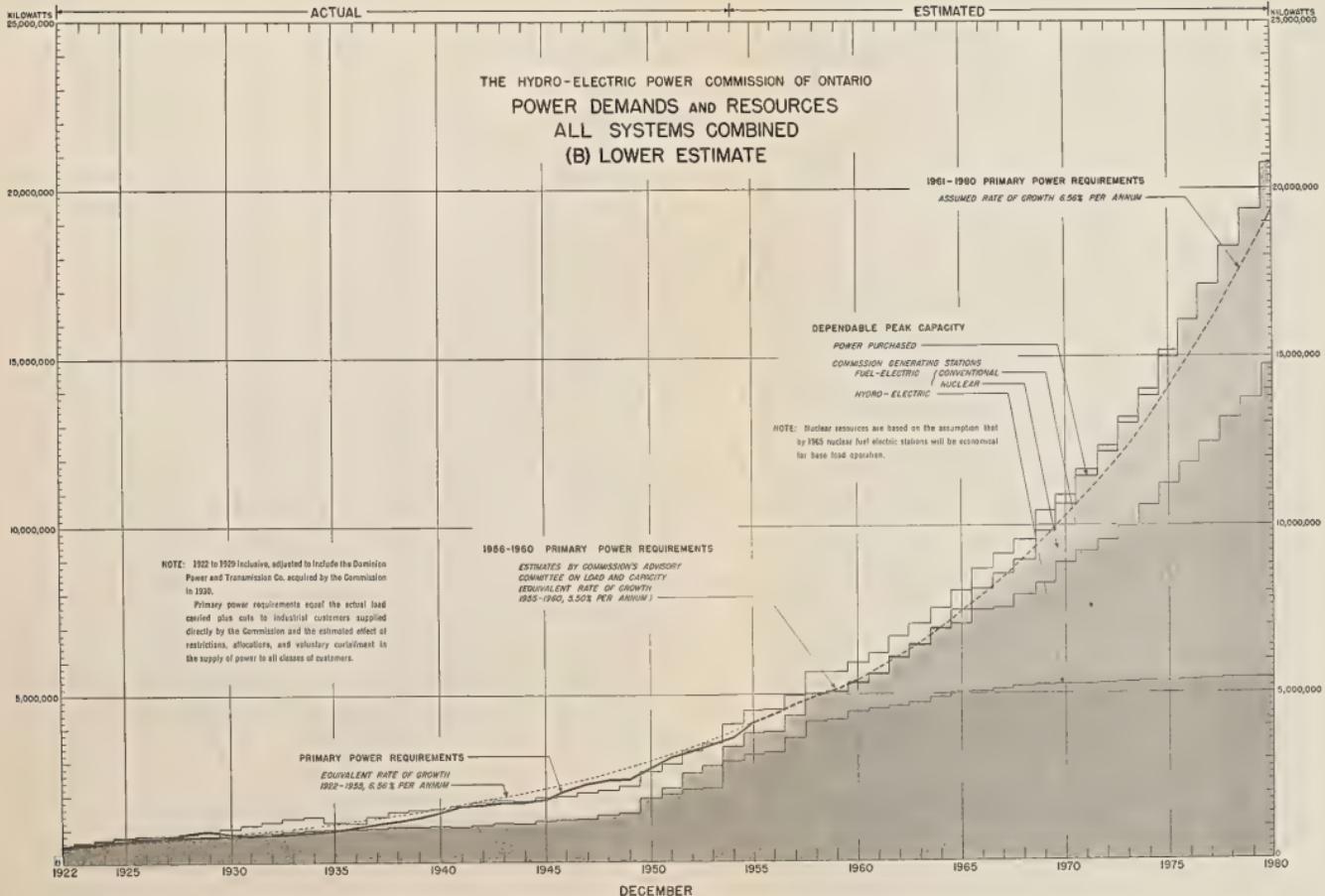
Whenever possible, this energy is sold in the secondary market where it is used for the generation of steam in electric steam generators, or by inter-connected systems to replace energy which would otherwise have to be produced on coal-fired steam generating plants.













**Table A83—Power Demands and Resources, The Hydro-Electric Power Commission of Ontario, 1910 to 1954**

Year (December)	*Primary Power Requirements		**Dependable Peak Capacity					
	Maximum (Kilowatts)	20-min. Peak (Horsepower)	Commission's Generating Stations		Power Purchased		Total Resources	
1910	4,000	5,400	—	—	7,420	9,946	7,420	9,946
1911	15,300	20,500	—	—	13,010	17,440	13,010	17,440
1912	30,200	40,500	—	—	21,210	28,432	21,210	28,432
1913	41,100	55,100	—	—	43,070	57,735	43,070	57,735
1914	68,100	91,300	3,600	4,826	72,050	96,582	75,650	101,408
1915	90,500	121,300	7,000	9,383	81,850	109,719	88,850	119,102
1916	134,700	180,600	25,900	34,719	114,655	153,693	140,555	188,412
1917	220,400	295,400	147,900	198,258	68,865	92,312	216,765	290,570
1918	221,300	296,600	147,900	198,257	80,060	107,319	227,960	305,576
1919	243,100	325,900	182,400	244,504	62,725	84,082	245,125	328,586
1920	355,300	476,300	305,200	409,115	61,000	81,770	366,200	490,885
1921	369,800	495,700	314,400	421,448	79,300	106,300	393,700	527,748
1922	460,700	617,600	461,900	619,169	34,000	45,576	495,900	664,745
1923	506,200	678,600	520,800	698,123	30,000	40,215	550,800	738,338
1924	544,400	729,800	609,200	816,622	33,000	44,236	642,200	860,858
1925	611,400	819,600	692,300	928,016	34,000	45,576	726,300	973,592
1926	651,100	872,800	702,400	941,555	37,000	49,598	739,400	991,153
1927	685,400	918,800	698,400	936,193	40,000	53,619	738,400	989,812
1928	794,200	1,064,600	702,400	941,555	101,000	135,389	803,400	1,076,944
1929	858,600	1,150,900	717,700	962,064	157,000	210,456	874,700	1,172,520
1930	865,600	1,160,300	782,500	1,048,928	245,000	328,418	1,027,500	1,377,346
1931	808,300	1,083,500	820,500	1,099,866	309,600	415,013	1,130,100	1,514,879
1932	808,900	1,084,300	848,500	1,137,399	369,900	495,845	1,218,400	1,633,244
1933	849,000	1,138,000	937,500	1,256,702	407,100	545,711	1,344,600	1,802,413
1934	897,100	1,202,500	925,500	1,240,617	454,500	609,249	1,380,000	1,849,866
1935	947,100	1,269,600	976,400	1,308,847	212,700	285,121	1,189,100	1,593,968
1936	1,037,600	1,390,900	979,900	1,313,539	196,700	263,673	1,176,600	1,577,212
1937	1,113,500	1,492,600	1,000,700	1,341,421	380,700	510,322	1,381,400	1,851,743
1938	1,169,200	1,567,200	1,058,700	1,419,169	454,800	609,651	1,513,500	2,028,820
1939	1,317,000	1,765,500	1,058,700	1,419,169	499,800	669,973	1,558,500	2,089,142
1940	1,390,900	1,864,500	1,064,700	1,427,212	514,300	689,410	1,579,000	2,116,622
1941	1,670,200	2,238,900	1,054,800	1,413,941	618,700	829,357	1,673,500	2,243,298
1942	1,691,800	2,267,800	1,091,800	1,463,539	674,700	904,424	1,766,500	2,367,963
1943	1,752,000	2,348,500	1,167,800	1,565,415	674,700	904,424	1,842,500	2,469,839
1944	1,780,300	2,386,400	1,157,800	1,552,011	665,700	892,359	1,823,500	2,444,370
1945	1,852,000	2,482,500	1,229,900	1,648,660	707,600	948,525	1,937,500	2,597,185
1946	2,118,700	2,840,100	1,236,800	1,657,909	750,000	1,005,362	1,986,800	2,663,271
1947	2,308,100	3,094,000	1,298,400	1,740,483	775,000	1,038,874	2,073,400	2,779,357
1948	2,438,900	3,269,300	1,409,800	1,889,812	756,000	1,013,405	2,165,800	2,903,217
1949	2,489,600	3,337,300	1,488,200	1,994,906	794,000	1,064,343	2,282,200	3,059,249
1950	2,799,000	3,752,000	1,965,600	2,634,853	764,700	1,025,067	2,730,300	3,659,990
1951	3,109,000	4,167,600	2,937,550	2,999,397	704,200	943,968	2,941,750	3,943,365
1952	3,278,300	4,394,500	2,664,850	3,572,185	688,500	922,922	3,353,350	4,495,107
1953	3,487,686	4,675,200	2,882,450	3,863,874	682,900	915,416	3,565,350	4,779,290
1954	3,701,584	4,961,900	3,451,850	4,627,145	683,200	915,817	4,135,050	5,549,962

\*Actual primary load carried plus cuts to industrial customers supplied directly by the Commission and the estimated effect of restrictions, allocations, and voluntary curtailment in the supply of power to all classes of customer.

\*\*The dependable peak capacity of a source of generation is the net output of power, subject to periodic change as equipment and water conditions vary, which the source is expected to be able to supply at the time of the system's primary peak demand. For Commission-owned or operated generating stations, it is presumed that all units are available and that the supply of water is normal. Contractual stipulations govern the capacities of sources of purchased power.

**Table A84—**  
**Total Power and Energy Generated and Purchased For Primary and Secondary Load Purposes in Ontario, The Hydro-Electric Power Commission of Ontario, 1923 to 1954**

Calendar Year	Power		Energy (Kilowatt-hours)
	(Maximum 20-min. Peak) (Kilowatts)	(Horsepower)	
1923	446,752	598,863	2,377,889,611
1924	487,888	654,006	2,531,398,698
1925	551,424	739,174	2,755,357,874
1926	605,626	811,831	3,029,291,691
1927	639,890	857,762	3,198,386,342
1928	748,688	1,003,603	3,574,142,496
1929	813,119	1,089,972	4,372,626,232
1930	866,811	1,161,945	4,465,709,085
1931	790,917	1,060,211	3,844,401,757
1932	802,886	1,076,255	3,866,326,799
1933	960,259	1,287,210	4,390,282,459
1934	1,075,079	1,441,125	5,451,582,862
1935	1,124,546	1,507,434	6,103,984,468
1936	1,143,072	1,532,268	6,386,342,142
1937	1,222,755	1,639,082	7,004,401,068
1938	1,311,945	1,758,640	6,843,148,675
1939	1,475,283	1,977,591	7,816,714,402
1940	1,457,405	1,953,626	8,749,715,389
1941	1,601,159	2,146,326	9,435,527,757
1942	1,640,312	2,198,810	10,217,882,688
1943	1,666,107	2,233,386	10,265,315,833
1944	1,767,252	2,368,971	10,416,900,708
1945	1,836,864	2,469,284	10,986,576,887
1946	1,932,965	2,591,106	11,337,743,348
1947	2,010,147	2,694,567	12,736,042,076
1948	2,019,023	2,706,465	12,939,026,372
1949	2,203,440	2,953,673	13,560,469,059
1950	2,666,665	3,574,618	15,228,268,050
1951	2,898,090	3,884,839	17,667,272,356
1952	3,266,296	4,378,413	18,816,135,202
1953	3,452,046	4,627,407	19,913,540,926
1954	3,686,544	4,941,748	20,835,999,104

**Table A85—**  
**Total Energy Generated and Purchased For Primary and For Secondary Load Purposes in Ontario, The Hydro-Electric Power Commission of Ontario, 1923 to 1954**

Calendar Year	Primary	Secondary	Primary and Secondary
			(Kilowatt-hours)
1923	2,377,889,611	—	2,377,889,611
1924	2,531,398,698	—	2,531,398,698
1925	2,755,357,874	—	2,755,357,874
1926	3,029,291,691	—	3,029,291,691
1927	3,198,386,342	—	3,198,386,342
1928	3,574,142,496	—	3,574,142,496
1929	4,372,626,232	—	4,372,626,232
1930	4,465,709,085	—	4,465,709,085
1931	3,844,401,757	—	3,844,401,757
1932	3,850,395,799	15,931,000	3,866,326,799
1933	3,924,872,171	465,410,288	4,390,282,459
1934	4,315,632,717	1,135,950,145	5,451,582,862
1935	4,661,343,652	1,442,640,816	6,103,984,468
1936	5,114,693,892	1,271,648,250	6,386,342,142
1937	5,806,700,183	1,197,700,885	7,004,401,068
1938	5,753,253,388	1,089,895,287	6,843,148,675
1939	6,346,598,167	1,470,116,235	7,816,714,402
1940	7,616,763,706	1,132,951,683	8,749,715,389
1941	8,754,926,235	680,601,522	9,435,527,757
1942	9,670,182,691	547,699,997	10,217,882,688
1943	9,812,788,983	452,526,850	10,265,315,833
1944	9,862,467,433	554,433,275	10,416,900,708
1945	10,332,592,232	653,984,655	10,986,576,887
1946	10,543,757,674	793,985,674	11,337,743,348
1947	12,348,990,123	387,051,953	12,736,042,076
1948	12,717,866,889	921,159,484	12,939,026,373
1949	13,357,455,510	203,013,549	13,560,469,059
1950	14,918,952,738	309,315,312	15,228,268,050
1951	17,144,461,299	522,811,057	17,667,272,356
1952	18,392,336,286	423,798,916	18,816,135,202
1953	19,587,891,026	325,649,900	19,913,540,926
1954	20,470,100,824	365,898,280	20,835,999,104

**Table A86—**  
**Ultimate Customers in Ontario Served Directly**  
**or Indirectly, The Hydro-Electric Power**  
**Commission of Ontario, 1933 to 1954**

Year	Number by Types of Service				
	Domestic	Commercial Light	Power	Farm	Total
1933	499,918	75,443	13,546	23,283	612,190
1934	504,183	75,016	13,591	23,882	616,672
1935	512,819	74,884	13,619	25,358	626,680
1936	526,905	75,878	13,690	28,184	644,657
1937	538,461	76,620	13,749	35,276	664,106
1938	559,531	78,021	13,806	44,507	695,865
1939	576,276	78,949	13,912	52,858	721,995
1940	594,588	79,512	14,189	58,727	747,016
1941	614,012	79,824	14,406	63,291	771,533
1942	629,403	77,326	14,499	63,748	784,976
1943	641,714	76,194	14,631	64,291	796,830
1944	655,527	86,555	14,666	59,639	816,387
1945	690,694	93,435	15,529	65,141	864,779
1946	718,147	99,400	16,493	72,285	906,325
1947	750,453	104,005	17,335	78,990	950,783
1948	788,927	108,728	17,915	88,754	1,004,324
1949	842,283	114,258	18,739	102,786	1,078,066
1950	926,483	125,696	19,996	114,725	1,186,900
1951	974,037	131,264	20,625	123,434	1,249,360
1952	1,026,281	140,059	21,453	129,451	1,317,244
1953	1,085,497	148,368	22,357	133,522	1,389,744
1954	1,153,409	154,287	23,318	136,013	1,467,027

**Table A87—Electric Energy Consumed by Ultimate Customers in Ontario Served Directly or Indirectly,**  
**The Hydro-Electric Power Commission of Ontario, 1933 to 1954**  
(Total Annual Kilowatt-hours)

Year	PRIMARY					Secondary	Total Primary and Secondary
	Domestic	Commercial Light	Power	Street Lighting	Farm		
1933	769,375,472	292,335,489	2,048,363,023	81,001,356	30,414,594	3,221,489,934	297,705,846    3,519,195,780
1934	827,764,645	306,632,722	2,312,150,411	82,283,309	33,737,014	3,562,568,101	1,037,947,521    4,600,515,622
1935	859,303,681	327,413,421	2,547,341,863	83,426,575	39,009,147	3,856,494,687	1,329,158,690    5,185,653,377
1936	918,780,197	355,235,553	2,862,903,156	82,110,166	46,222,812	4,265,251,884	1,257,541,102    5,592,792,986
1937	968,383,423	393,067,119	3,404,406,550	82,915,591	55,012,709	4,903,785,392	1,165,014,316    6,068,799,708
1938	1,051,651,921	427,020,841	3,211,643,006	85,009,746	68,047,713	4,843,373,227	994,187,879    5,837,561,106
1939	1,111,145,790	459,635,100	3,452,011,901	86,833,172	81,836,045	5,191,462,008	1,416,785,982    6,608,247,990
1940	1,176,728,077	508,986,422	4,367,196,463	86,237,428	94,445,311	6,233,593,701	1,299,398,083    7,532,991,784
1941	1,236,890,541	540,995,581	5,297,516,701	89,010,486	107,061,610	7,271,474,919	666,010,740    7,937,485,659
1942	1,296,833,995	531,680,336	6,531,181,190	84,029,601	116,448,363	8,560,173,485	350,054,549    8,910,228,034
1943	1,340,910,776	472,129,977	6,643,882,830	75,102,771	121,428,714	8,653,455,068	266,474,830    8,919,929,898
1944	1,442,065,415	539,915,569	6,589,222,421	79,105,339	113,706,660	8,764,015,404	350,554,034    9,114,569,438
1945	1,600,565,047	653,794,099	6,672,861,214	93,730,340	137,194,727	9,158,145,427	375,519,614    9,533,665,041
1946	1,840,765,649	750,545,161	6,156,566,833	99,554,647	176,460,859	9,023,893,149	566,459,309    9,590,352,458
1947	2,042,502,502	830,946,747	7,205,634,698	104,961,283	206,420,795	10,390,466,025	425,892,587    10,816,358,612
1948	2,242,588,810	811,316,104	7,333,129,481	110,453,332	242,273,102	10,739,760,829	203,896,840    10,943,657,669
1949	2,453,387,585	888,934,057	7,651,548,802	114,755,806	275,946,330	11,384,572,580	195,184,174    11,579,756,754
1950	3,140,362,534	1,193,355,849	9,009,371,936	123,448,160	403,018,641	13,869,557,120	287,233,307    14,156,790,427
1951	3,516,514,339	1,369,461,041	9,395,471,384	131,959,108	410,722,321	14,824,128,193	486,074,127    15,310,202,320
1952	3,933,426,939	1,520,084,219	9,887,458,476	145,653,841	468,478,642	15,955,102,117	385,934,261    16,341,036,378
1953	4,328,771,981	1,682,111,669	10,316,636,285	158,163,440	510,783,290	16,996,466,665	295,204,913    17,291,671,578
1954	4,944,935,437	1,867,343,423	10,281,577,417	170,668,690	561,672,463	17,826,197,430	332,348,841    18,158,546,271

**Table A88—**  
**Miles of Line and Number of Customers, Rural  
 Power District, The Hydro-Electric Power  
 Commission of Ontario, 1923 to 1954**

Fiscal Year Ended	Total Miles of Rural Primary Distribution Line	Total Number of Rural Customers
Oct. 31, 1923	605.42	4,169
1924	909.09	10,412
1925	1,288.22	12,395
1926	1,952.70	17,065
1927	2,862.40	23,263
1928	3,791.30	29,867
1929	4,835.70	35,604
1930	6,726.50	44,782
1931	8,196.70	54,280
1932	8,918.37	60,309
1933	9,244.73	62,750
1934	9,435.10	64,572
1935	9,877.84	67,359
1936	10,637.17	73,010
1937	12,645.69	84,074
1938	15,035.76	97,409
1939	17,706.25	111,531
1940	19,251.11	122,358
1941	20,022.63	131,254
1942	20,065.86	134,159
1943	20,087.07	136,164
1944	20,437.48	144,218
1945	21,569.48	156,560
1946	22,757.80	173,362
1947	23,765.14	194,053
1948	27,321.24	220,089
1949	32,059.26	255,295
Dec. 31, 1950	34,792.96	292,811
1951	38,197.58	318,606
1952	40,277.08	343,537
1953	41,588.87	371,855
1954	42,539.65	390,617

**Table A89—**  
**Fixed Assets and Long-Term Liabilities, The  
 Hydro-Electric Power Commission of Ontario,  
 1930 to 1955**

Fiscal Year Ended	Fixed Assets at Cost	Long-term Liabilities
Oct. 31, 1930	\$ 263,695,762	\$ 242,739,022
1931	277,814,629	253,282,697
1932	293,927,648	259,332,276
1933	296,105,343	266,405,531
1934	293,146,948	269,043,447
1935	295,611,156	268,342,598
1936	298,979,713	272,189,655
1937	308,103,358	262,410,278
1938	318,966,903	268,897,504
1939	329,086,010	258,353,440
1940	340,274,052	255,094,301
1941	354,933,027	241,380,083
1942	367,191,124	236,306,530
1943	367,958,245	215,954,404
1944	370,110,648	196,704,122
Dec. 31, 1950	860,502,056	570,860,042
1951	1,020,360,762	690,334,092
1952	1,176,866,092	862,291,118
1953	1,354,642,243	1,040,484,559
1954	1,468,558,729	1,161,630,183
1955	1,565,000,000 <sup>1</sup>	1,208,826,856

<sup>1</sup>Estimated

**Table A90—Expenditures on Capital Construction, The Hydro-Electric Power Commission of Ontario, Fiscal Years 1946 to 1954**

Fiscal Year Ended	Generation	Transformation	Transmission	Rural	Other	Total
	(\$000's)	(\$000's)	(\$000's)	(\$000's)	(\$000's)	(\$000's)
Oct. 31, 1946	6,160	4,184	3,980	4,942	320	19,586
1947	20,725	9,587	7,892	6,672	961	45,837
1948	48,122	12,839	14,369	13,514	1,833	90,677
1949	79,472	19,172	22,061	23,827	5,584	150,116
Dec. 31, 1950 <sup>1</sup>	86,637	28,025	30,346	19,521	6,951	171,480
1951	94,267	25,143	17,886	22,725	4,597	164,618
1952	96,682	22,954	15,629	23,033	4,534	162,831
1953	117,311	21,711	15,444	24,402	4,767	183,635
1954	76,649	15,360	16,091	20,133	4,585	132,818
Total	626,025	158,975	143,697	158,769	34,132	1,121,598

<sup>1</sup>14-month fiscal period.

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